LORAIN PRODUCTS

A RELIANCE ELECTRIC COMPANY

FIRST by Design

power board Instructions

- INSTALLATION
- OPERATION
- MAINTENANCE

1292N1

DESIGNERS AND MANUFACTURERS OF

power equipment without moving parts SUB-CYCLE® CONVERTERS AND FLOTRO RECTIFIERS

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LORAIN MODEL 1292N1

POWER BOARD

Spec. No. 5821-033 Serial No. 131

LORAIN PRODUCTS CORPORATION WARRANTY

Seller warrants that the products it manufactures or sells shall be free from defects in material and workmanship during the first 90 days after the product is activated. During said period, Seller will repair or replace any defective parts free of charge to Buyer, including any labor costs. In addition, Seller shall repair or replace any defective parts, so discovered by Buyer to be defective within two years from the date of shipment of same, provided Buyer promptly so notifies Seller. In no case shall Seller's liability under this warranty extend beyond two years from the date of shipment of said product. This warranty shall not apply to any products which are misused, modified, repaired, or otherwise abused by Buyer or others. The repair or replacement of defective parts, or the refund of the invoice cost thereof, as shall be determined by Seller in its sole discretion, shall be the limit of Seller's liability hereunder and shall be Buyer's sole and exclusive remedy.

Handling or service charges in connection with the return of such products, if approved by Seller, shall be charged as determined by Seller. Seller shall not be liable in any event for any general or special, incidental or consequential damages to Buyer in excess of the amount of the purchase price of the products.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES. SELLER MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE WITH RESPECT TO ANY PRODUCTS EXCEPT AS HEREIN EXPRESSLY PROVIDED.

SYSTEMS AND EQUIPMENT NOT ECONOMICALLY RETURNABLE TO THE FACTORY

In the event that the product involved is a system or equipment which, in the judgement of Lorain Products Corporation, is not economically returnable to the factory or if Lorain Products Corporation has performed the installation, supervised the installation, or performed testing and turn-on, circuit components and Lorain repair labor are covered by this warranty for the first 90 days from date of turn-on and circuit components are warranted for two years from the date of shipment. Upon request, Lorain will send a service technician to the site to determine if the unit is defective in circuit components or workmanship, and will repair the equipment. If the failure is Lorain's fault, no invoice for circuit components or repair labor will be issued if the complaint has been issued within the first 90 days from date of turn-on. If the complaint is issued more than 90 days from the date of turn-on but within two years from date of shipment, the customer will be billed at the prevailing Customer Service rates but will not be billed for circuit components. If the problem occurs after two years from the date of shipment, circuit component and repair labor are billable.

If the problem has been created by misuse or abuse of the equipment or by malfunction of associated equipment or by environmental conditions, at any time after shipment, the customer will be billed for circuit component and labor.

GENERAL PROVISIONS

Lorain Products Corporation shall not be obligated to pay any costs or changes incurred by the customer or by any other party. In no event will Lorain Products Corporation be liable for consequential damages. No waiver, alteration or modification of any of the provisions herein shall be binding on Lorain Products Corporation unless in writing and signed by an authorized official of Lorain Products Corporation. If, during any warranty period, the subject equipment has, in the opinion of Lorain Products Corporation, been modified or misrepaired, the warranty will be void unless the modifications or repairs have been made after consultation with the corporation and upon the recommendation of the corporation.

LORAIN MODEL 1292N1 POWER DISTRIBUTION BAY WITH SINGLE FREQUENCY RINGING SPEC. NO. 5821-033

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1. DESCRIPTION

General

1.01 The LORAIN Model 1292N1 is a special 48 volt power distribution bay that is designed to be used in conjunction with Nippon Electric Company equipment.

1.02 The 1292N1 is equipped with rectifiers, a 25 watt single frequency ringing system, an alarm panel, a low-voltage-disconnect panel, distribution circuits, a ground bar, termination panel and a N.E.C. PDB.

1.03 The 1292N1 is mounted in a 7'-0" box framework. For the equipment arrangement within the box framework, refer to Assembly Drawing J-5821-033.

Distribution Circuits

1.04 The ringing and the -48V outputs are fused at the distribution fuse panel(s). The fused outputs are connected to the N.E.C. PDB termination panel where the distribution output connections are made.

Alarm Features

1.05 The 1292N1 has five alarm features: a rectifier fail alarm, a ring generator fail alarm, a battery discharge alarm, a low-voltage-disconnect alarm, and a distribution fuse alarm. Each of the alarm circuits provides a local visual alarm and a closed loop circuit for an external alarm. The wiring for the external alarms is terminated at the N.E.C. PDB termination panel.

2. INSTALLATION

Mounting

2.01 The box framework of the 1292N1 is drilled for floor mounting and for mounting to the overhead superstructure, if required. For the size and location of the mounting holes, see Sketch C of Assembly Drawing J-5821-033.

Electrical Connections

2.02 The input power connections for the 1292N1 are shown on Block Wiring Diagram T-5821-033. The installer is to connect the negative lead of the battery to the shunt and the positive lead to the ground bar. The rectifiers have cords with locking-type connector plugs which plug into 208VAC receptacles.

2.03 The output connections have been simplified by the use of the N.E.C PDB termination panel. The N.E.C. PDB panel consolidates all the outputs on a single panel. The output connections are made by plugging-in the output cables to the N.E.C. PDB termination panel.

2.04 On all model types, except type 1, reference battery leads must be run from the battery to the alarm panel as shown on the block wiring diagram.

3. OPERATION

3.01 For the operation description of the rectifiers and the ring generator, refer to the furnished instruction manuals for these units. For detailed information on the low-voltage-disconnect panel, refer to Instruction Form 3926, which is included in this instruction manual.

Alarms

3.02 The alarm circuits are shown on the schematic diagram, SD-5821-033. An operation description of each of the five alarm circuits is given below.

Rectifier Fail Alarm

3.03 A failed rectifier will provide ground at one of the RFA inputs of circuit card A1, which is located in the alarm panel. This will illuminate lamp RFA on the alarm panel and energize relay K2 of circuit card A1. Contacts of K2 operated provide a closed loop circuit for an external minor rect. fail alarm. Should two or more rectifiers fail, relay K1 of circuit card A1 will operate, providing a closed loop circuit for an external major rect. fail alarm.

Ring Fail Alarm

3.04 The failure of the main ring generator in the T25PX Ringing System will cause the system to transfer to the standby generator and cause ground to be applied to relay K2 of circuit card A2. Contacts of relay K2 will illuminate lamp RING FAIL on the alarm panel and form a closed loop circuit for an external minor ring fail alarm. Should the standby generator also fail, the ringing system alarm circuit will cause ground to be applied to relay K1 of circuit card A2. Relay K1 will provide a closed loop circuit for an external major ring fail alarm.

Battery Discharge Alarm

3.05 When current flows from the battery due to A.C. power failure or when load current exceeds the output current capability of the rectifiers, a voltage drop will appear across the shunt causing relay K1 of circuit card A3 to operate. Contacts of relay K1 will illuminate lamp BAT DISCH on the alarm panel

Battery Discharge Alarm (Con't)

and provide a closed loop circuit for an external Battery Discharge Alarm. The alarm has been factory adjusted for zero discharge current. For a different adjustment, refer to the adjustment section of this form.

Low-Voltage-Disconnect Alarm

3.06 The Low-Voltage-Disconnect assembly will disconnect the loads from the DC power when the battery voltage falls below 41.0 volts. Circuit card VCR, located in the Low-Voltage-Disconnect panel, monitors the output voltage of the battery. When the output voltage falls below 41.0 volts, contactor K1 will be de-energized, lamp LV DISC on the Low-Voltage-Disconnect panel will be illuminated, and a closed loop circuit will be provided for an external Low-Voltage-Disconnect alarm. When the output voltage rises above 49.0 volts, the contactor will be energized and normal operation will be resumed. For adjustment of the voltage limits, refer to Form 3926.

Distribution Fuse Alarm

3.07 A blown -48V distribution fuse will cause the fuse alarm relay, which is located on a distribution fuse panel, to be energized. Contacts of the fuse alarm relay will illuminate lamp FA and provide a closed loop circuit for an external fuse alarm.

3.08 All of the closed loop circuits for the external alarms are terminated on the alarm connector of the N.E.C. PDB termination panel.

Remote Ring Gen Transfer

3.09 Remote transfer of the ring generators can be accomplished through the use of an external momentary-depress switch. The wiring for the remote transfer is terminated on the alarm connector of the N.E.C. PDB termination panel. For a description of the remote transfer function, refer to the instruction manual for the T25PX Ringing System.

4. ADJUSTMENTS

4.01 For the adjustments on the rectifiers, ringing equipment, and Low-Voltage-Disconnect panel, refer to the respective instructions.

Battery Discharge Alarm

4.02 As was mentioned in Paragraph 3.05, the Battery Discharge Alarm has been factory adjusted for zero discharge current. The procedure for readjustment is given below. Potentiometer R15 on Battery Discharge Alarm circuit card A3 has a graduated dial. The 100% setting of R15 indicates 100% of the rated current for any 50 mv shunt will activate the alarm. To readjust R15, determine what percentage of the rated shunt current the desired discharge current is and adjust R15 accordingly. Example; if 20 amps of discharge current is to activate the alarm and the shunt is rated at 200 amps, the 20 amps represents 10% of the rated shunt current.

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LORAIN CONTACTOR AND CONTROL CIRCUIT FOR CEMF CELL CONTROL OR BATTERY DISCONNECT

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Voltage Control Relay . . 4

1. DESCRIPTION

1.01 This contactor and control circuit provides a means to control a contactor for battery disconnect or CEMF cell control. These assemblies consist of a voltage control printed circuit card assembly (VCR) and a contactor (K1) mounted on a panel.

Refer to the table below for the operating limits for the different types of applications. The voltage settings shown below are normally furnished unless otherwise specified.

INPUT VOLTAGE	ASSEMBLY NO.	RELAY RACK MOUNTING (INCHES)	CAPACITY (AMPERES)	ADJUSTABLE LIMITS		BATTERY DISC.		CEMF CELL CONTROL			
								EQUALIZE CHARGE		BATTERY DISCH.	
				LOW	HIGH	RELEASE	OPERATE	RELEASE	OPERATE	RELEASE	OPERATE
24V	4377-101	3-1/2" X 19"	50	20-25V	LOW LIMIT PLUS 0-5V	20V	25V	24V	27V	22.5V	25.5V
	4377-102		100								
	4377-103		200								
	4377-106	3-1/2" X 23"	50								
	4377-107		100								
	4377-108		200								
	4377-109		400								
48V	4377-113	3-1/2" X 19"	50	38-50V	LOW LIMIT PLUS 0-10V	42.0V	49.0V	50.0V	53.0V	47.5V	51.5V
	4377-114		100								
	4377-115		200								
	4377-118	3-1/2" X 23"	50								
	4377-119		100								
	4377-120		200								
	4377-121		400								
	4377-122	5-1/4" X 23"	600								
	4377-123	8-3/4" X 23"	1200								

2. INSTALLATION

Mounting

2.01 Relay rack mountings for a specific contactor and control assembly are indicated in the above table.

Electrical Connections

2.02 Input and output terminals are provided on a job basis. Customer to specify.

WARNING

The protection offered by fusing of the control relay is limited. Proper polarity must be observed when making electrical connections.

CAUTION

A one ampere supply fuse is provided in the sensing lead to the voltage control relay (VCR). This fuse must not be removed when the assembly is in an operating condition.

3. ADJUSTMENT

General

3.01 Separate adjustments determine the low voltage and high voltage operating limits of the voltage relay (VCR). In event the high or low voltage settings must be changed, the low voltage setting (R4) should be adjusted first as it sets the range of the high voltage setting (R2). A regulated variable DC test voltage source and an accurate DC voltmeter should be used to make these adjustments.

WARNING

Polarity of both DC supply voltage and test voltage connections to the voltage sensing circuit is critical. Incorrect polarity will damage the voltage sensing assembly.

(A) Battery Disconnect Operation

1) Supply ground at receptacle pin D or H of printed circuit card (VCR). This will hold the contactor(s) energized, thus supplying the load while adjusting the voltage control relay assembly.

2) Remove supply fuse (F1) and connect variable test voltage source observing correct polarity to receptacle pins C and S of the printed circuit card (VCR)

3) Turn R2 fully counterclockwise; set test voltage to desired low limit. If relay K is not already operated, turn R4 counterclockwise until relay K operates. Slowly turn R4 clockwise until relay K on the printed circuit card releases. This sets the low limit.

4) Turn R2 fully clockwise. Set test voltage to desired high limit. Slowly turn R2 counterclockwise until relay K on the printed circuit card operates. This sets the high limit.

5) Remove the variable test voltage source and replace the supply fuse (F1). The voltage control relay should operate provided the battery voltage is at the proper value.

6) Remove the ground connected in Step (1), above.

(B) CEMF Cell Control Operation (Equalize Condition)

1) Supply ground at receptacle pin E or J of printed circuit card (VCR). This will hold the contactor(s) energized, thus bypassing the CEMF cells while adjusting the voltage control relay assembly.

2) Remove supply fuse (F1) and connect variable test voltage source observing correct polarity to receptacle pins C and S of the printed circuit card (VCR).

3) Turn R2 fully counterclockwise; set test voltage to desired low limit. If relay K is not already operated, turn R4 counterclockwise until relay K operates. Slowly turn R4 clockwise until relay K on the printed circuit card releases. This sets the low limit.

4) Turn R2 fully clockwise. Set test voltage to desired high limit. Slowly turn R2 counterclockwise until relay K on the printed circuit card operates. This sets the high limit.

5) Remove the variable test voltage source and replace the supply fuse (F1). The voltage control relay should remain released provided the battery voltage is at the proper value.

6) Remove the ground connected in Step (1), above.

(C) CEMF Cell Control Operation (Battery Discharge Condition)

1) Adjustment of the (VCR) relay, in this application, will cause the CEMF cells to be removed from the discharge circuit, increasing the discharge voltage approximately 2.5 volts. If this voltage is not acceptable the contacts of the contactor(s) should be insulated or the coil circuit disconnected so that the CEMF cells remain in the discharge circuit during the adjustments.

2) Remove supply fuse (F1) and connect variable test voltage source observing correct polarity to receptacle pins C and S of the printed circuit card (VCR).

3) Turn R2 fully counterclockwise; set test voltage to desired low limit. If relay K is not already operated, turn R4 counterclockwise until relay K operates. Slowly turn R4 clockwise until relay K on the printed circuit card releases. This sets the low limit.

4) Turn R2 fully clockwise. Set test voltage to desired high limit. Slowly turn R2 counterclockwise until relay K on the printed circuit card operates. This sets the high limit.

5) Remove the variable test voltage source and replace the supply fuse (F1).

6) If the contacts of the contactor(s) were insulated or the coil disconnected, remove the insulation or reconnect the coil circuit. The contactor(s) will operate mementarily until the voltage control relay operates provided the battery voltage is at the proper value.

4. CIRCUIT DESCRIPTION

General

4.01 Relay K on the printed circuit card (VCR), with a voltage detector circuit, make up the voltage control circuit. Relay K is normally operated if the voltage being monitored is above the upper setting. Relay K releases when the voltage being monitored decreases to the lower setting.

Battery Disconnect

4.02 Relay K, released, opens contacts holding the line contactor(s) energized. This causes the line contactor(s) to release disconnecting the load from the battery. Relay K will remain released until the monitored voltage increases to a preset value. When this preset value is reached, relay K will again energize causing the line contactor(s) to energize reconnecting the battery to the load.

CEMF Cell Control

4.03 Relay K, released, closes contacts energizing the line contactor(s). This causes a contact of the line contactor to close removing the CEMF cell from the circuit. Relay K will remain released until the monitored voltage increases to a preset value. If the voltage being monitored is above this setting, relay K will energize causing the line contactor(s) to release returning the CEMF cells to the circuit.

(1) If the normal operating voltage is below the upper setting, the CEMF cells are in the discharge circuit only during an equalize condition.

(2) If the normal operating voltage is above the upper setting, the CEMF cells are normally in the discharge circuit. The CEMF cells are only removed during a discharged battery condition.

Voltage Control Relay (Printed Circuit Card VCR)

4.04 A voltage sensing network compares a portion of the voltage being monitored with a constant voltage developed across a zener diode. The voltage sensing network is adjusted so that during a low voltage condition, the voltage developed across a portion of it is lower than the constant zener diode voltage. If the voltage being monitored should decrease to the low limit setting of potentiometer R4, the voltage detector circuit releases relay K.

Once released, relay K will not operate until the voltage being monitored increases to the high limit setting of potentiometer R2.

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ITEM	NOTE	DESCRIPTION	PART NO.	STOCKLIST LIST 1	2	3	4	5	6	7	8	9	10	H	G	F	E	D	C	B	A	SHOP INST
1		BOX FRWK, 7'-0"X19"X24"	3772-210	1	2	2																
		,7'-0"X24"X30"	3772-211				2	2														X
A																						
		SIDE COVER	3547-539	4	4	4																
5			3547-541				4	4														X
		STANDOFF KIT	4133-036	1	1	1	1	1														X
	3	EXTENSION BRACKET	3513-354	2	4	4	4	4														
10		GROUND STRIP	4835-530	1	1	1	1	1														X
		GROUND BAR	4361-038	1	1	1																
			4361-041				1	1														X
B																						
		TERMINATION PNL	4341-511	1	1	1																
15			4341-514				1	1														X
		ALARM PNL	4378-030	1	1	1	1	1														X
		LOW VOLT DISC, 50A	4377-113	1																		
20		,100A	4377-114		1	1																
		,200A	4377-120				1															
		,400A	4377-121					1														
C																						
25		FUSE PNL ASSY	4316-505		1	1																
			4316-713				2	2														
			4317-409					1														
			4318-014	1	1	1																
			4318-446				1	1														
30	5	DESIGNATION CARDS	3172-752	1	1	1	1	1														
		RECTIFIER, RJ12F50	5371-017	3																		
		,RL50F50	5431-028		2	3																
D		,RHM100D50	5454-010				2															
35		,RHM200D50	5472-014					2														
		RING GEN, T25PX	5126-009-1	1	1	1	1	1														
40		BAFFLE, 3-1/2"X19"	3777-614	3																		
		,5-1/4"X19"	3777-616		2	3																
		,5-1/4"X23"	3777-617				2	2														
		SHUNT MOUNTING BASE	3815-102					1														
E																						
45		SHUNT, 50A	2982-710	1																		
		,150A	2982-713		1	1																
		,200A	2982-714				1															
		,400A	2982-717					1														
50																						
		BLANK PNL, 1-3/4"X19"	3531-103	1	1	1																
		,3-1/2"X19"	3532-101	1																		
F																						
55																						
		ADAPTER, 3-1/2"X19"TO23"	3471-102					2	2													
		FUSE, 1/4A	2486-203	6	10	18	28	48														
	5	,1/2A	2486-205	9	12	18	30	54														
60		,1A	2483-222	1	1	1	1	1														
		,1-1/3A	2486-208	16	16	16	16	16														
	5	,5A	2486-217	6	6	6	6	6														
	5	,30A	2483-515	9	15	27	42	72														
65																						
		LUG KIT, 14-4	4835-523	5	11	11	20	27														
		,4-3/0	4835-526	2	2	2	2	1														
		,1/0-350MCM	4835-527					1														
		LUG, 4-3/0	2456-168	1	1	1	1															
70		,1/0-350MCM	2456-170					1														
G																						
		LAMP	2581-213	9	9	9	9	9														
	4	LAMP SOCKET	2584-113	1	1	1	1	1														
		LAMP CAP	2584-636	1	1	1	1	1														
75		BUSBAR	3476-102		1	1	2	3														
			3627-320		1	1																
H																						
		SHUNT PNL	3532-275	1	1	1																
			3532-256					1	1													
80																						

1. RECTIF
CHARAC
UNLESS

2. MOUNT
ON FRO
WITH IN
EQUIPM

3. LOCATE
PANEL,
AS SHO

4. LOCATI
TO LOW
(SEE S

5. PROVID
ACCOR
SHOWN
FIGURI
TO RIG

NUFACTURING NOTES

ESIGNATIONS ARE TO BE 1/4" BLACK
ALL OTHER STAMPING TO BE 3/16"
RWISE SPECIFIED.

PLATE(S), FURNISHED BY N.E.C.,
OOR ANGLE IN ACCORDANCE
ATION SHOWN IN ASSOCIATED
RRANGEMENT FIGURE.

DRILL FOR MOUNTING N.E.C. PDB
HED BY N.E.C.ON EXTENSION BRKT
FIG 1.

DRILL FOR ADDITION OF LAMP
AGE DISCONNECT PANEL.
TAMP ABOVE LAMP: L.V. DISC.

ES AND DESIGNATION CARDS IN
WITH FUSE ASSIGNMENT
SOCIATED WIRING DIAGRAM
E NUMBERING STARTS FROM LEFT
H THE TOP FUSE PANEL.

TABLE A

A EQUIPMENT (ENGINEERING INFORMATION)		B RATING	C LIST	D NO	E CIRCUIT & FIGURES EQUIPPED	SCHEMATIC INFORMATION S NUMBER	FIG	OPT
COMMON EQUIPMENT, WIRING AND ASSEMBLY, INCLUDING BOX FRWK(S), RECTIFIERS AND DISTRIBUTION FOR ONE COMPLETE 48 VOLT POWER BOARD WITH 25WATT SINGLE FREQUENCY RINGING.	SIZE 1		1		T-5821-033, FIG 1			
	SIZE 2		2		T-5821-033, FIG 2			
	SIZE 3		3		T-5821-033, FIG 3			
	SIZE 4		4		T-5821-033, FIG 4			
	SIZE 5		5		T-5821-033, FIG 5			

ENGINEERING NOTES

51. EQUIPMENT TO BE ORDERED BY SPECIFICATION AND LIST NO. PER TABLE A OR C.

REVISIONS

REV NO.	CHKD BY — CHG SLIP NO.	DATE	DESCRIPTION
1			NEW

TABLE B

70 TYPE ALM FUSES AMP	LPC. PART NO	DESIGNATION PINS LPC PART NO.
1/4	2486-202 (70F)	2486-282 (VIOLET)
1/2	2486-205 (70G)	2486-284 (RED)
3/4	2486-206 (70H)	2486-286 (BROWN)
1-1/3	2486-208 (70A)	2486-289 (WHITE)
2	2486-212 (70B)	2486-292 (ORANGE)
3	2486-215 (70C)	2486-294 (BLUE)
5	2486-217 (70D)	2486-297 (GREEN)

TABLE C
SPECIFICATION CROSS REFERENCE

N.E.C. SPEC NO.	L.P.C. SPEC NO.
NG-400716-100	5821-033-1
NG-400716-200	5821-033-2
NG-400716-300	5821-033-3
NG-400716-400	5821-033-4
NG-400716-500	5821-033-5

POWER SYSTEMS

EQUIPMENT AND ASSEMBLY
48 VOLT POWER DISTRIBUTION EQUIPMENT
WITH 25WATT SINGLE FREQUENCY RINGING

MODEL 1292N1

LORAIN PRODUCTS CORPORATION
LORAIN, OHIO
LORAIN PRODUCTS (CANADA) LTD., ST. THOMAS, ONTARIO

DWG SIZE D

DESIGN	D.GURNACK	ISS. 1
DRAWN BY	E.GARTON	DATE 2-20-80
CHECKED BY		DATE 2-27-80
APPROVED BY		DATE
APPROVED BY		DATE 3-27-80
RATING	STANDARD (N.E.C. ONLY)	

J-5821-033

SHEET 1 OF 2

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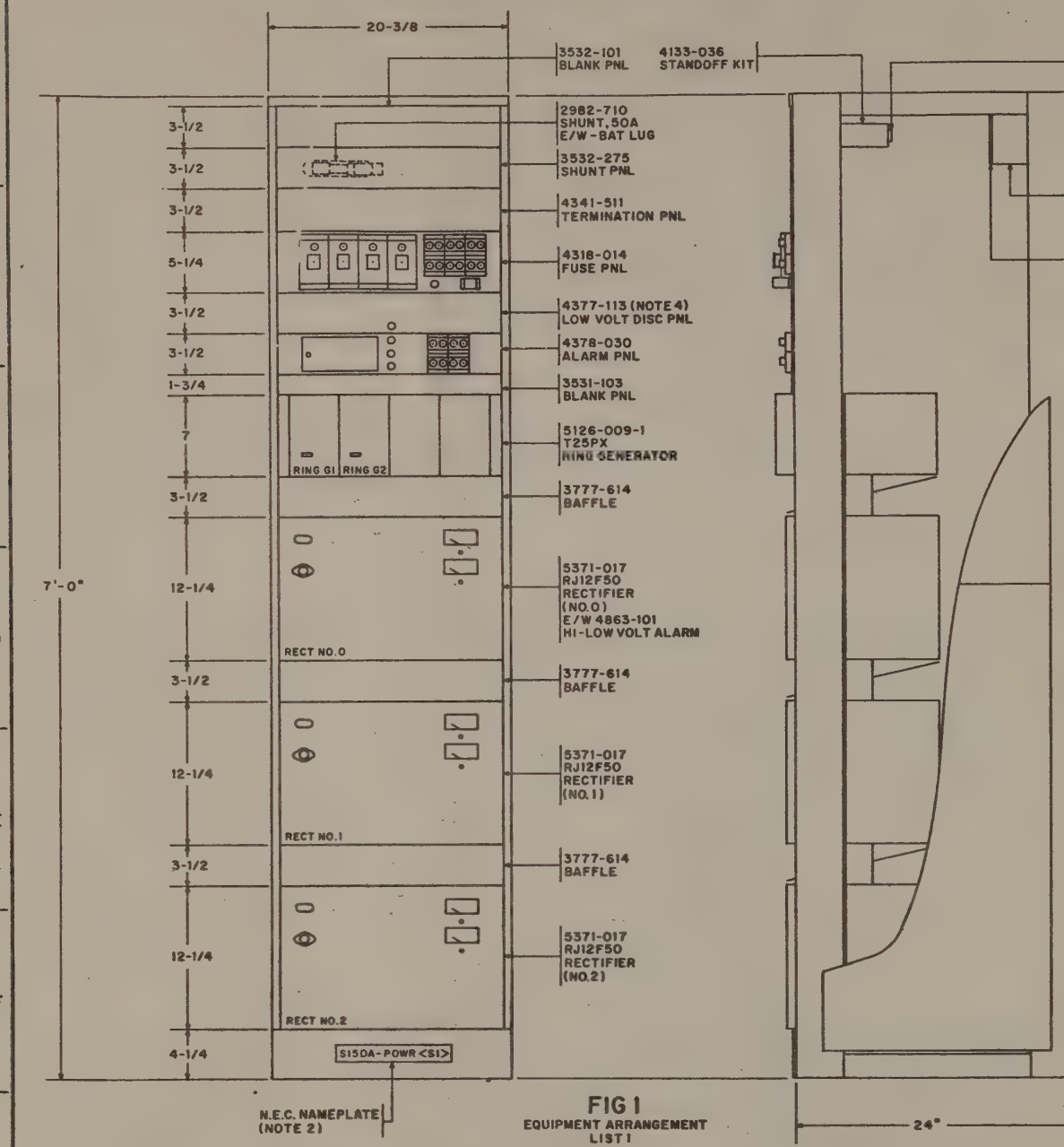
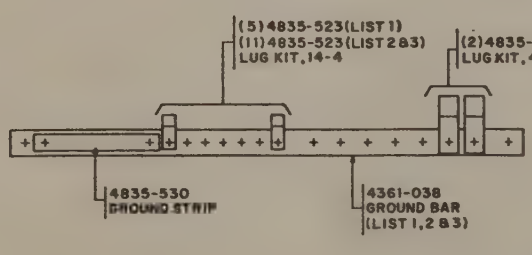
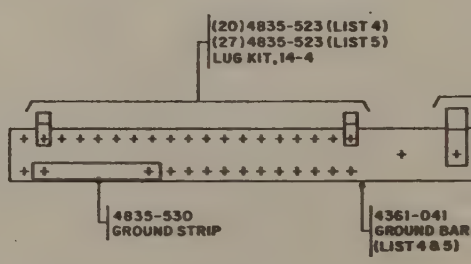


FIG 1
EQUIPMENT ARRANGEMENT
LIST 1





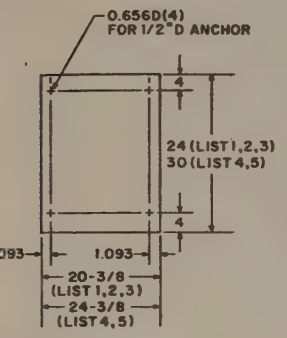
SK A
GROUND BAR ASSEMBLIES

DRAWING ISSUE 1 E.L.G.

4361-038 GROUND BAR SEE SK A

3513-354 EXTENSION BRACKET

N.E.C. PDB (NOTE 3)



SK C
FLOOR DRILLING

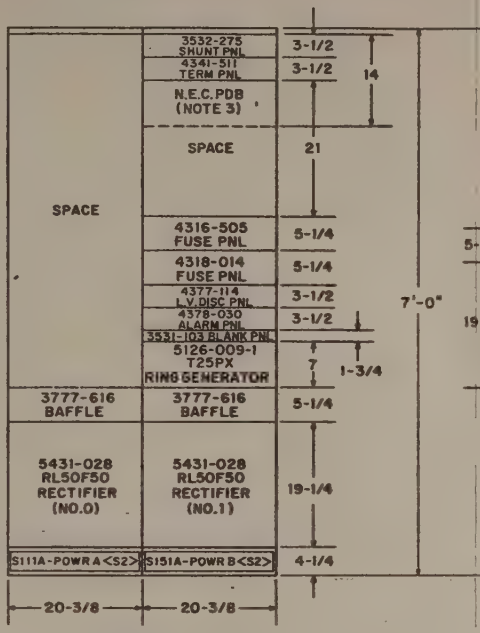


FIG 2
EQUIPMENT ARRANGEMENT
LIST 2

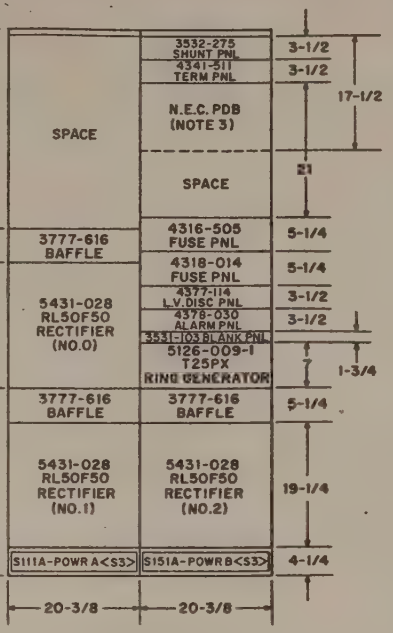


FIG 3
EQUIPMENT ARRANGEMENT
LIST 3

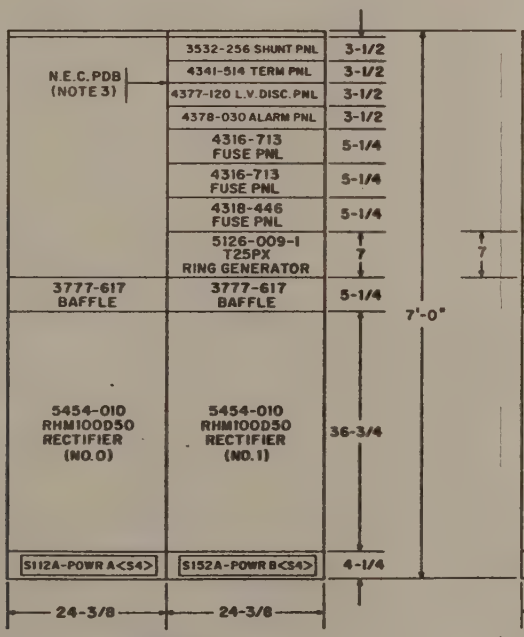


FIG 4
EQUIPMENT ARRANGEMENT
LIST 4

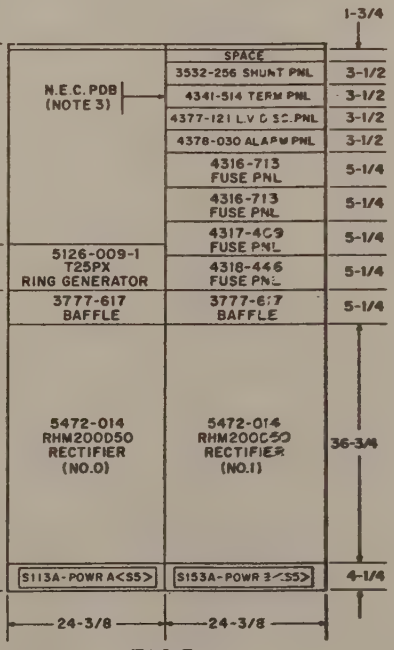
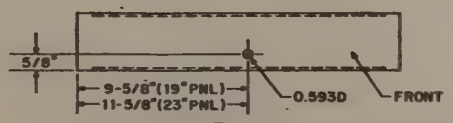


FIG 5
EQUIPMENT ARRANGEMENT
LIST 5

)4835-526(LIST 4)
)4835-526(LIST 5)
UG KIT, 4-3/0
)4835-527(LIST 5)
UG KIT, 1/0-350MCM



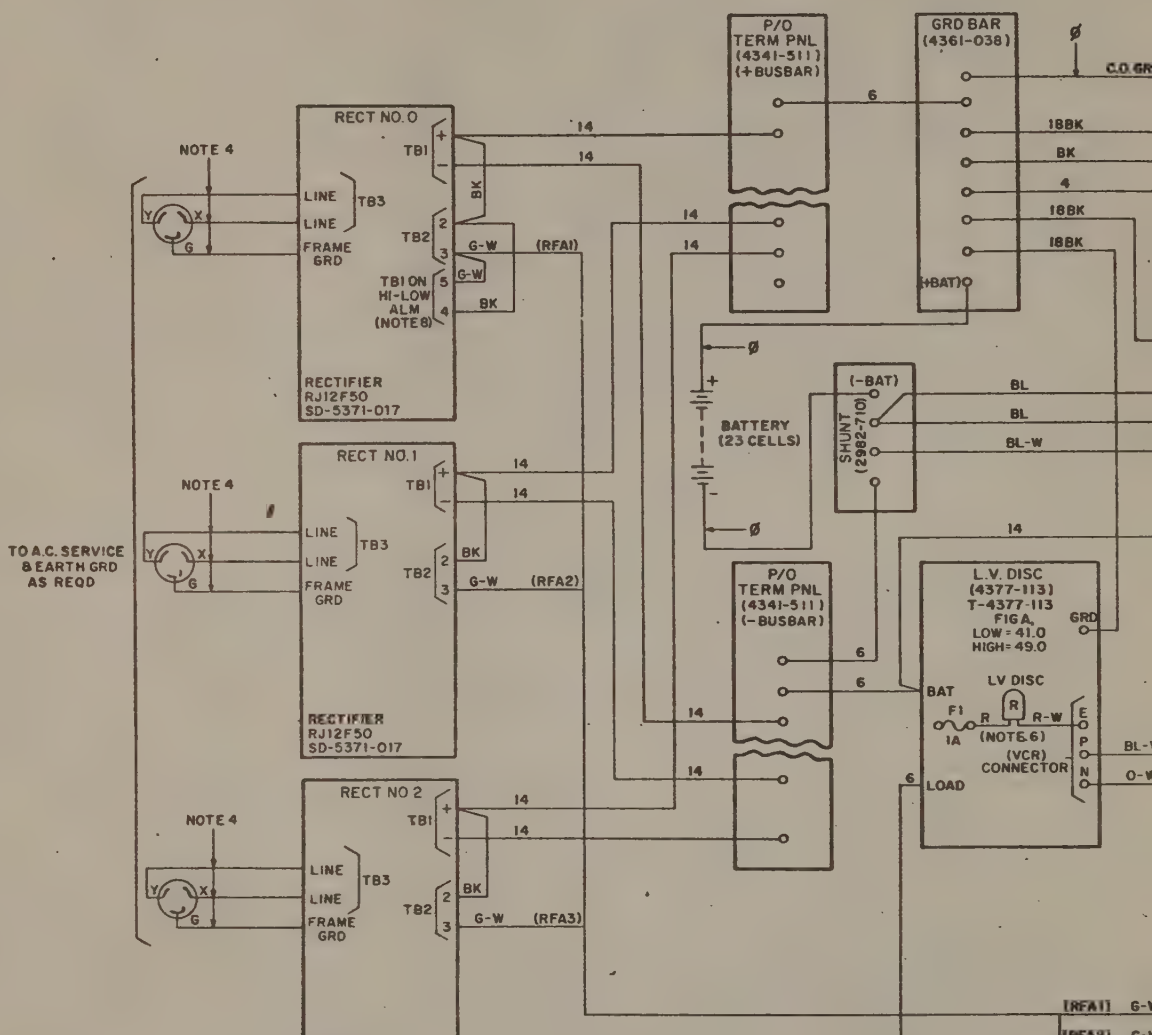
SK B
L.V. DISC. ALARM LAMP
(NOTE 4)

SHEET 1

MODEL 1292N1

J-5821-033

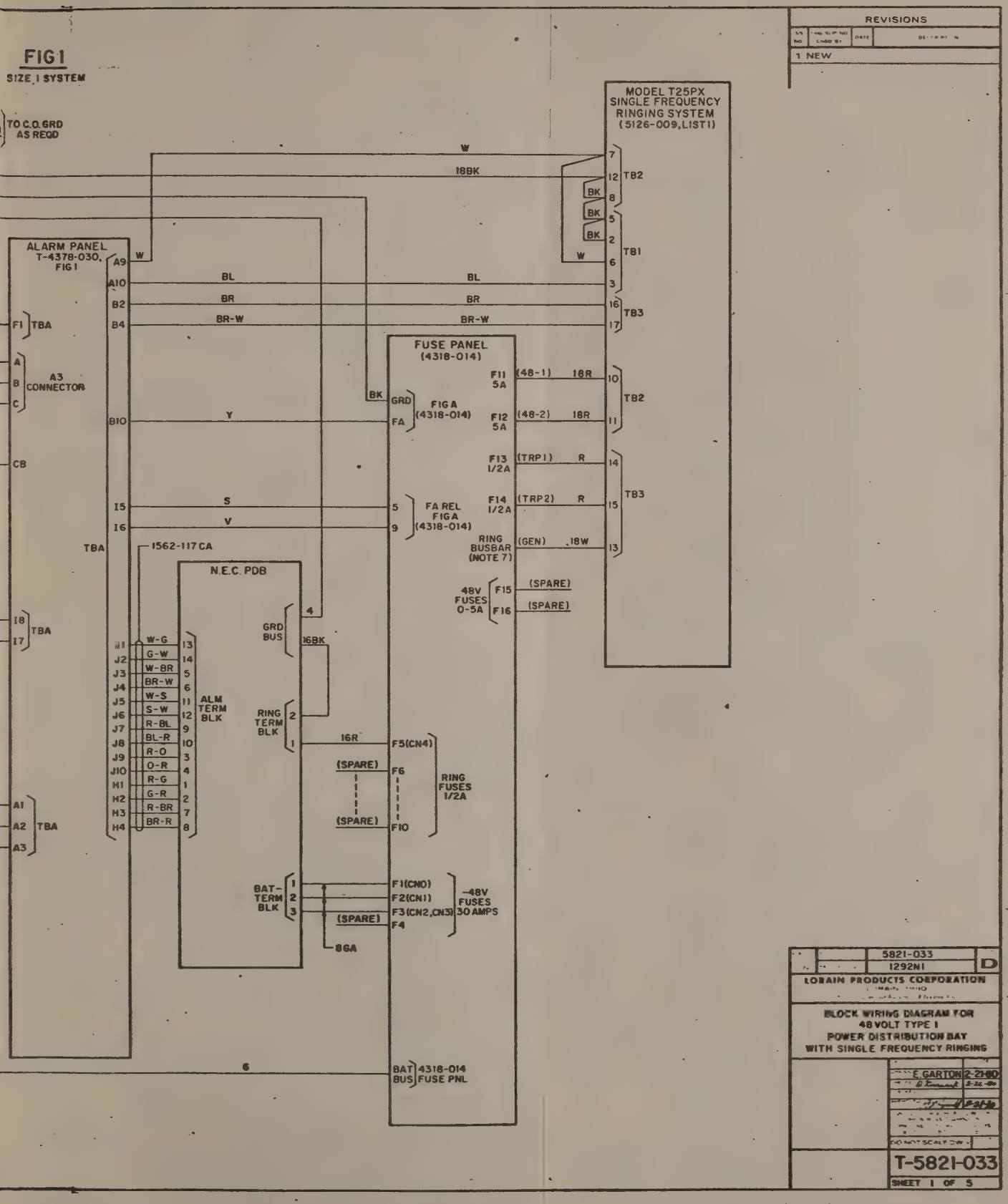
LORAIN PRODUCTS CORPORATION DWG SIZE D SHEET 2



NOTES:

1. ALL COLORED LEADS NOT OTHERWISE SPECIFIED TO BE 20 GA.
2. Ø - INDICATE LEADS RUN BY INSTALLER.
3. SEE ASSOCIATED EQUIPMENT INSTRUCTION MANUALS, POWER DATA SHEETS OR CIRCUITS FOR COMPLETE ALARM TERMINATIONS AND OPTIONS AVAILABLE. ONE SET OF COMMON ALARM LEADS FOR THE SYSTEM IS PROVIDED ON TB1 OF THE ALARM PANEL.
4. PROVIDE 6' INPUT CORD WITH LOCKING TYPE PLUG CONNECTED FOR 208 VOLT INPUT.
5. REMOTE TRANSFER IS ACTUATED BY A MOMENTARY GROUND TO THE (TR1) OR (TR2) LEAD. (NOT CONNECTED)
6. WIRE LV DISC LAMP ON 4377-113 ASSEMBLY AS SHOWN ON THIS DRAWING.
7. REMOVE THE 12GA AND 22GA BROWN STRAPS TO THE UPPER ROW OF 0-5A FUSES ON 4318-014 FUSE PANEL AND CONNECT TO RING GEN AS SHOWN PER THIS DRAWING.
8. ONLY ONE RECTIFIER NEED BE EQUIPPED WITH A HI-LOW VOLTAGE ALARM FOR THE SYSTEM. PROVIDE IN RECTIFIER NO.0 ONLY.

TOOL RECORD



	5821-033
	1292N1 D

LORAIN PRODUCTS CORPORATION

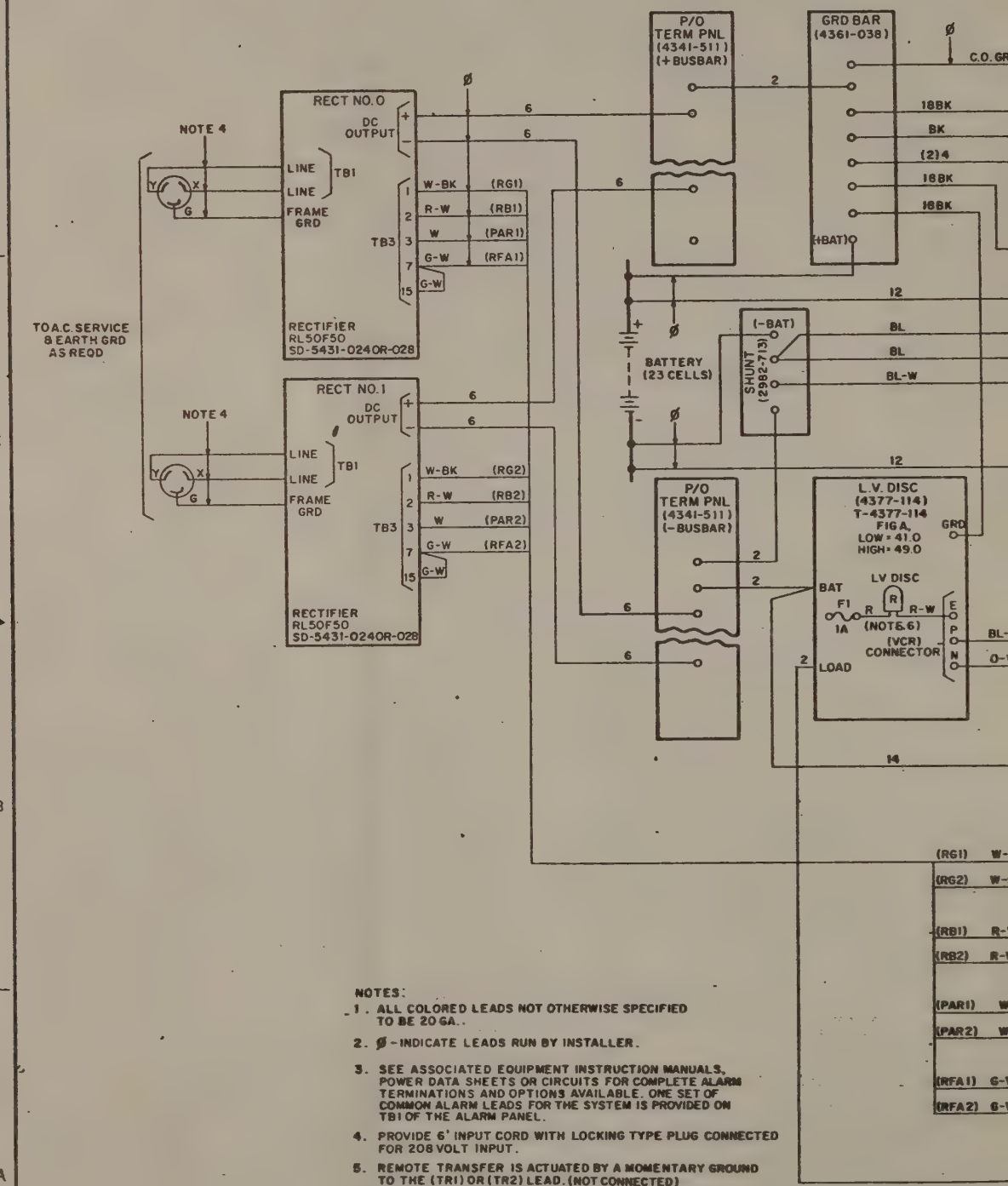
BLOCK WIRING DIAGRAM FOR 48 VOLT TYPE 1 POWER DISTRIBUTION BAY WITH SINGLE FREQUENCY RINGING

E. GARTON 2-21-80

DO NOT SCALE DWG.

T-5821-033

SHEET 1 OF 5



NOTES:

1. ALL COLORED LEADS NOT OTHERWISE SPECIFIED TO BE 20 GA..
2. Ø - INDICATE LEADS RUN BY INSTALLER.
3. SEE ASSOCIATED EQUIPMENT INSTRUCTION MANUALS, POWER DATA SHEETS OR CIRCUITS FOR COMPLETE ALARM TERMINATIONS AND OPTIONS AVAILABLE. ONE SET OF COMMON ALARM LEADS FOR THE SYSTEM IS PROVIDED ON TB1 OF THE ALARM PANEL.
4. PROVIDE 6' INPUT CORD WITH LOCKING TYPE PLUG CONNECTED FOR 208 VOLT INPUT.
5. REMOTE TRANSFER IS ACTUATED BY A MOMENTARY GROUND TO THE (TR1) OR (TR2) LEAD. (NOT CONNECTED)
6. WIRE LV DISC LAMP ON 4377-114 ASSEMBLY AS SHOWN ON THIS DRAWING.
7. REMOVE THE 12GA AND 22GA BROWN STRAPS TO THE UPPER ROW OF 0-5A FUSES ON 4318-014 FUSE PANEL AND CONNECT TO RING GEN AS SHOWN PER THIS DRAWING.

TOOL RECORD

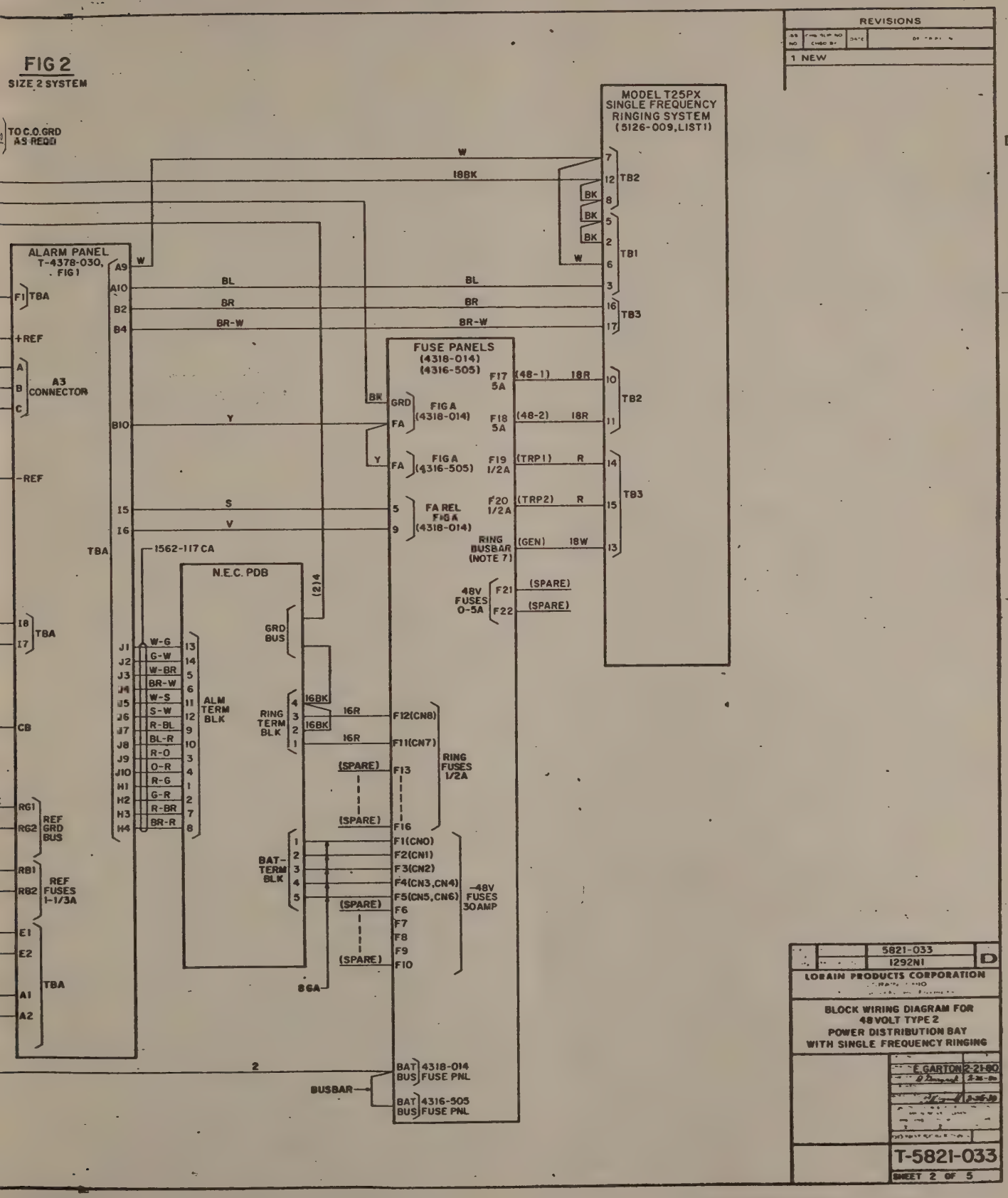
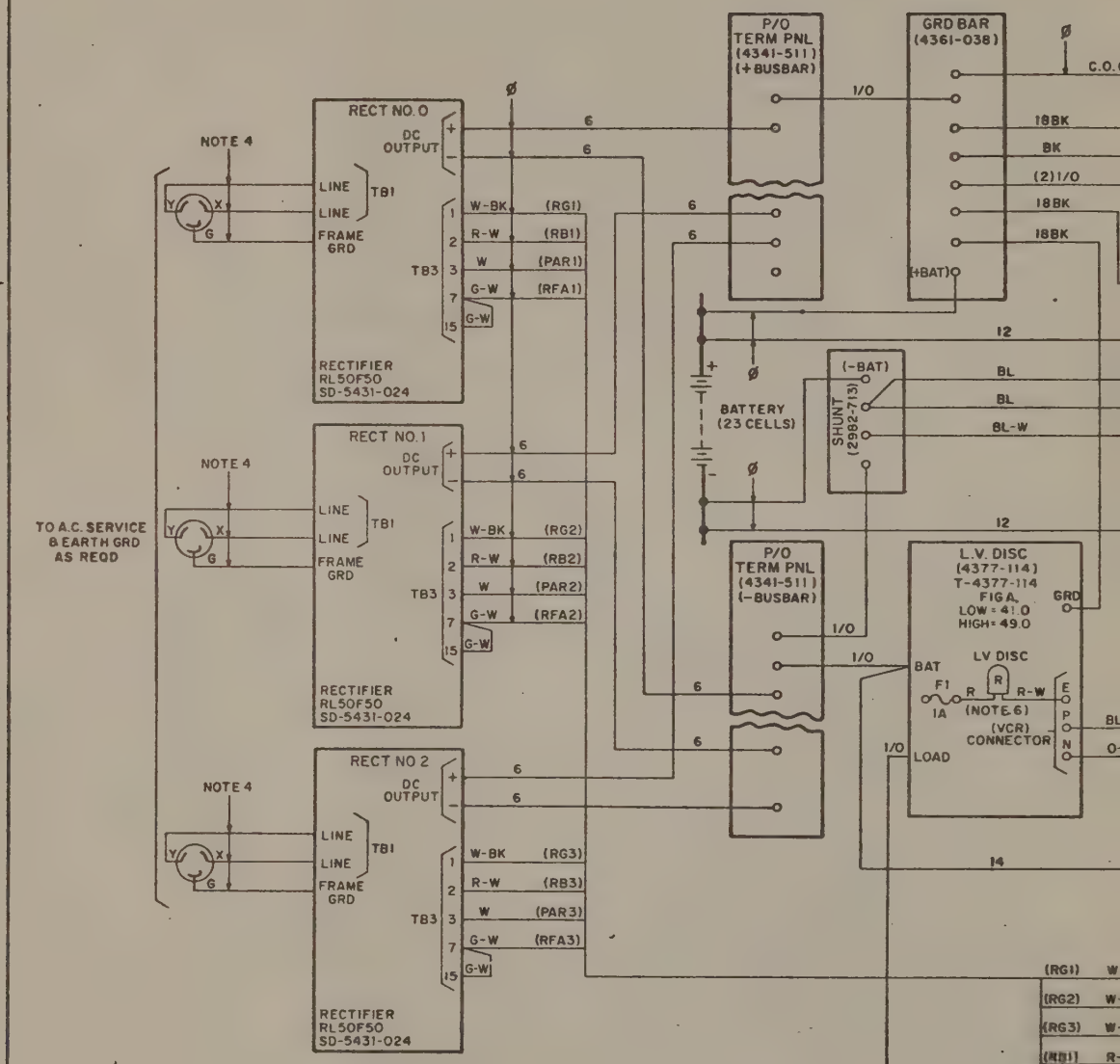


FIG 2
SIZE 2 SYSTEM
REVISIONS
1 NEW
TO C.O. GRD AS REQD
MODEL T25PX SINGLE FREQUENCY RINGING SYSTEM (5126-009, LIST 1)
ALARM PANEL T-4378-030, FIG 1
A3 CONNECTOR
TBA
1562-117 CA
N.E.C. PDB
ALM TERM BLK
RING TERM BLK
BAT-TERM BLK
GRD BUS
(2)4
8GA
FUSE PANELS (4318-014) (4316-505)
FIG A (4318-014)
FIG A (4316-505)
FA REL FIG A (4318-014)
RING BUSBAR (NOTE 7)
48V FUSES 0-5A
RING FUSES 1/2A
-48V FUSES 30 AMP
REF GRD BUS
REF FUSES 1-1/3A
TB1
TB2
TB3
F12(CN8)
F11(CN7)
F13
F16
F1(CNO)
F2(CN1)
F3(CN2)
F4(CN3,CN4)
F5(CN5,CN6)
F6
F7
F8
F9
F10
F17 5A (48-1) 18R
F18 5A (48-2) 18R
F19 1/2A (TRP1) R
F20 1/2A (TRP2) R
(GEN) 18W
F21 (SPARE)
F22 (SPARE)
(SPARE)
BUSBAR
BAT BUS 4318-014 FUSE PNL
BAT BUS 4316-505 FUSE PNL
5821-033
1292N1
LORAIN PRODUCTS CORPORATION
BLOCK WIRING DIAGRAM FOR 48 VOLT TYPE 2 POWER DISTRIBUTION BAY WITH SINGLE FREQUENCY RINGING
E. GARTON 2-21-80
T-5821-033
SHEET 2 OF 5



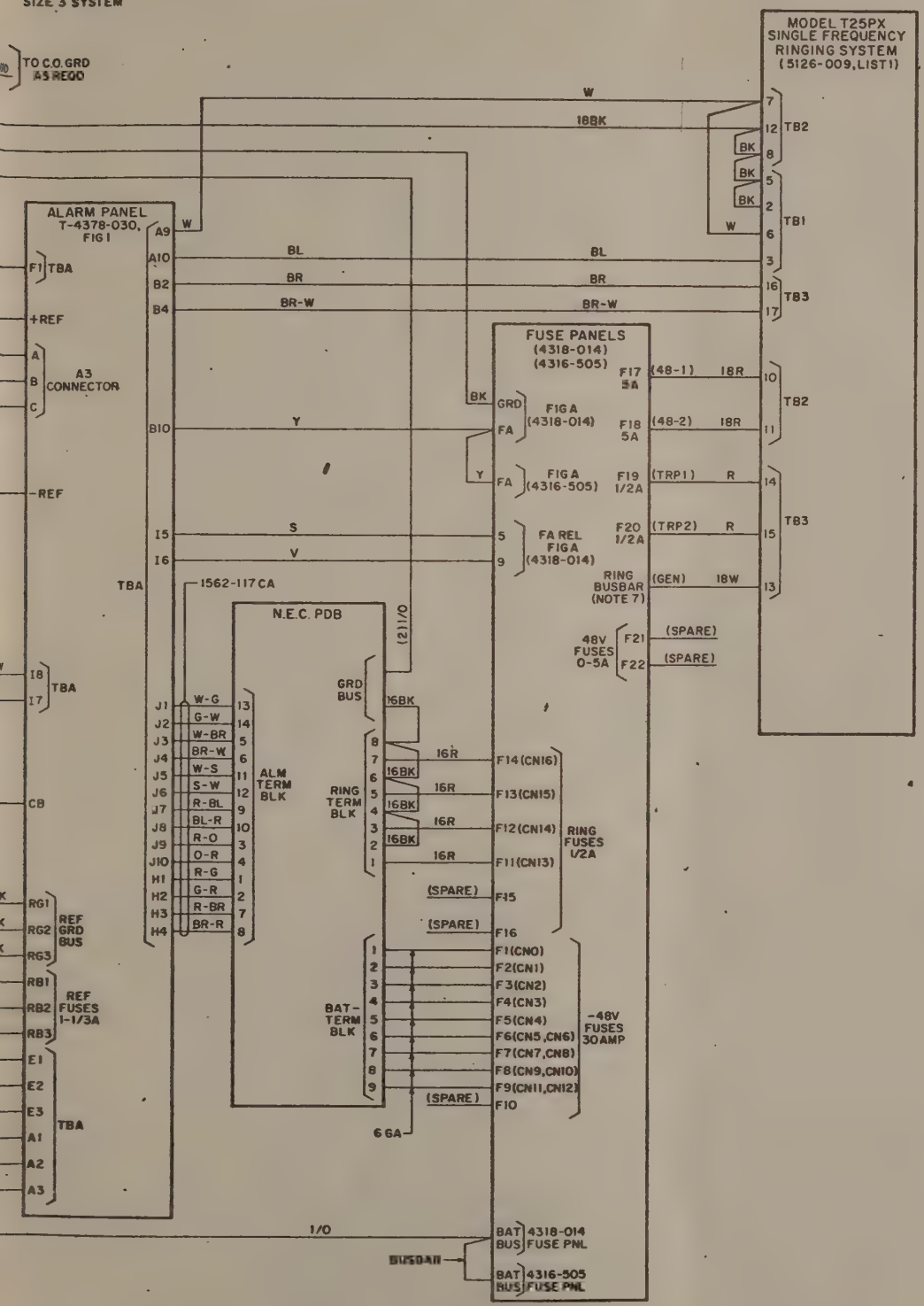
NOTES:

1. ALL COLORED LEADS NOT OTHERWISE SPECIFIED TO BE 20 GA.
2. Ø - INDICATE LEADS RUN BY INSTALLER.
3. SEE ASSOCIATED EQUIPMENT INSTRUCTION MANUALS, POWER DATA SHEETS OR CIRCUITS FOR COMPLETE ALARM TERMINATIONS AND OPTIONS AVAILABLE. ONE SET OF COMMON ALARM LEADS FOR THE SYSTEM IS PROVIDED ON TB1 OF THE ALARM PANEL.
4. PROVIDE 6' INPUT CORD WITH LOCKING TYPE PLUG CONNECTED FOR 208 VOLT INPUT.
5. REMOTE TRANSFER IS ACTUATED BY A MOMENTARY GROUND TO THE (TR1) OR (TR2) LEAD. (NOT CONNECTED)
6. WIRE LV DISC LAMP ON 4377-114 ASSEMBLY AS SHOWN ON THIS DRAWING.
7. REMOVE THE 12GA AND 22GA BROWN STRAPS TO THE UPPER ROW OF 0-5A FUSES ON 4318-014 FUSE PANEL AND CONNECT TO RING GEN AS SHOWN PER THIS DRAWING.

TOOL RECORD

FIG3
SIZE 3 SYSTEM

REVISIONS		
1	NEW	



	5821-033
	1292N1

LORAIN PRODUCTS CORPORATION

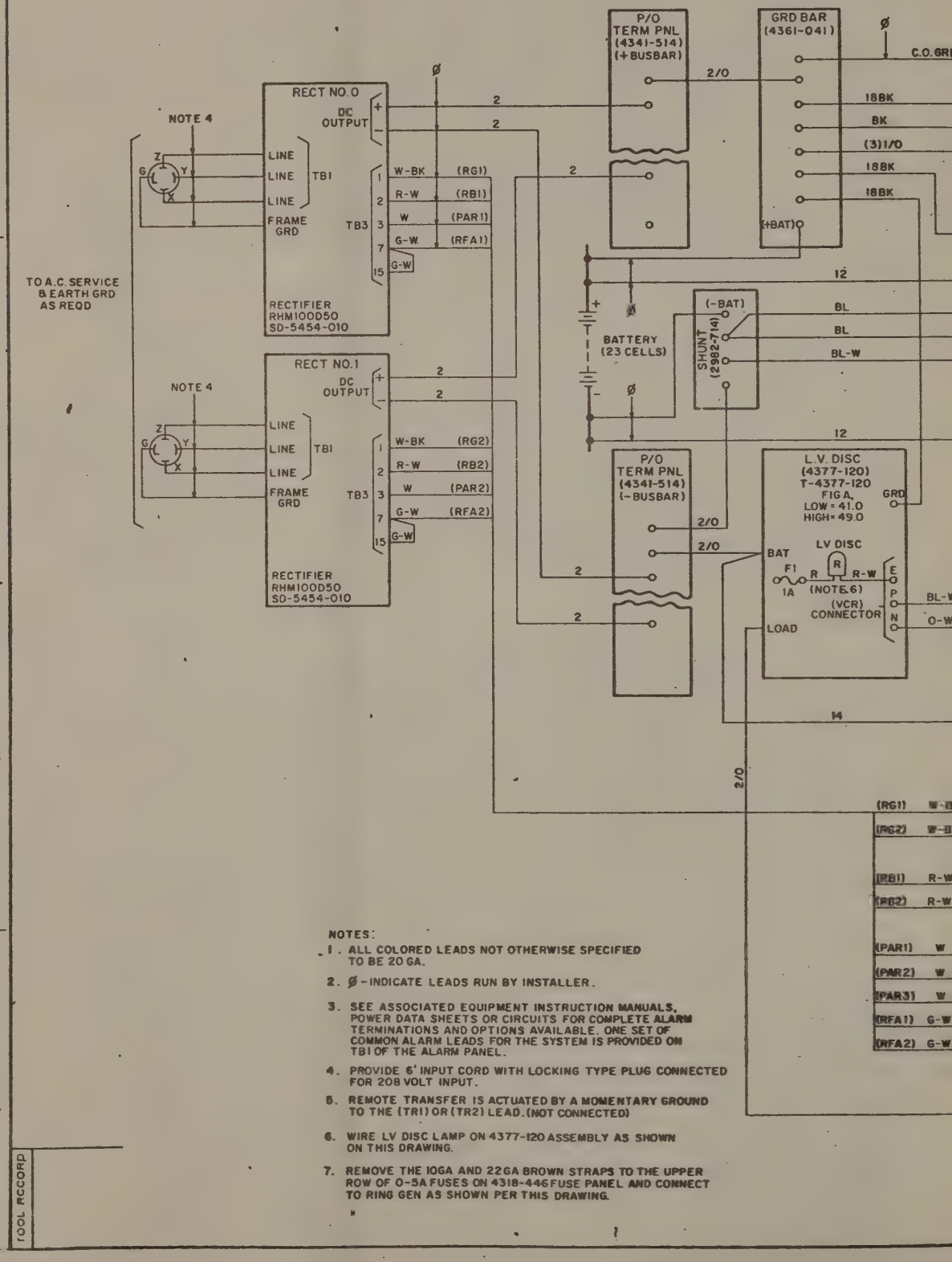
BLOCK WIRING DIAGRAM FOR 48 VOLT TYPE 3 POWER DISTRIBUTION BAY WITH SINGLE FREQUENCY RINGING

E. GARTON 2-21-90

DO NOT SCALE PRINT

T-5821-033

SHEET 3 OF 5



NOTES:

1. ALL COLORED LEADS NOT OTHERWISE SPECIFIED TO BE 20 GA.
2. Ø - INDICATE LEADS RUN BY INSTALLER.
3. SEE ASSOCIATED EQUIPMENT INSTRUCTION MANUALS, POWER DATA SHEETS OR CIRCUITS FOR COMPLETE ALARM TERMINATIONS AND OPTIONS AVAILABLE. ONE SET OF COMMON ALARM LEADS FOR THE SYSTEM IS PROVIDED ON TB1 OF THE ALARM PANEL.
4. PROVIDE 6' INPUT CORD WITH LOCKING TYPE PLUG CONNECTED FOR 208 VOLT INPUT.
5. REMOTE TRANSFER IS ACTUATED BY A MOMENTARY GROUND TO THE (TR1) OR (TR2) LEAD. (NOT CONNECTED)
6. WIRE LV DISC LAMP ON 4377-120 ASSEMBLY AS SHOWN ON THIS DRAWING.
7. REMOVE THE 10GA AND 22GA BROWN STRAPS TO THE UPPER ROW OF 0-5A FUSES ON 4318-446 FUSE PANEL AND CONNECT TO RING GEN AS SHOWN PER THIS DRAWING.

TOOL RECORD

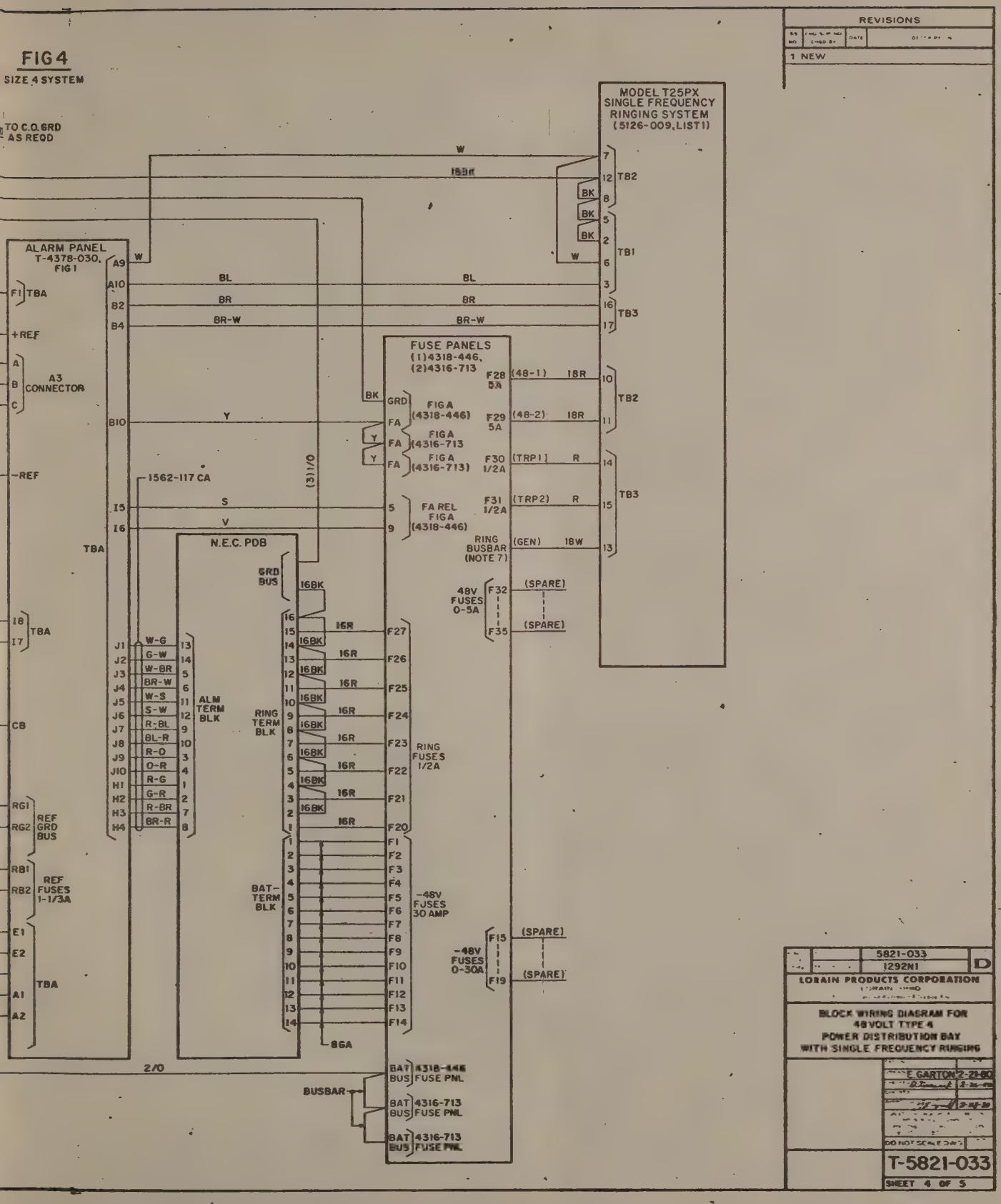
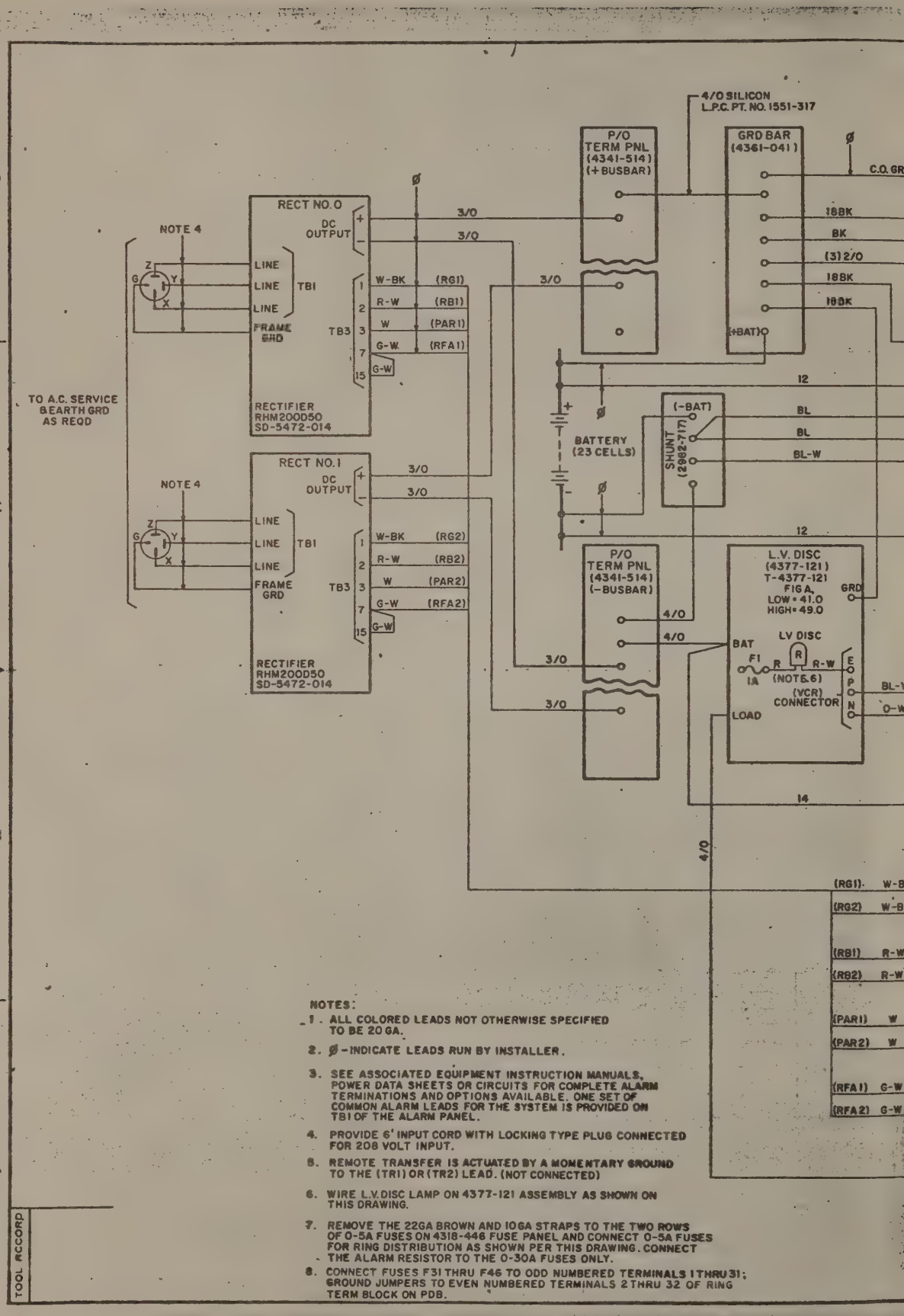


FIG 4
SIZE 4 SYSTEM
REVISIONS
1 NEW
TO C.O. GRD AS REQD
MODEL T25PX SINGLE FREQUENCY RINGING SYSTEM (5126-009, LIST 1)
ALARM PANEL T-4378-030, FIG 1
A3 CONNECTOR
TBA
N.E.C. PDB
ALM TERM BLK
RING TERM BLK
BAT-TERM BLK
FUSE PANELS (1)4318-446, (2)4316-713
FIG A (4318-446)
FIG A (4316-713)
FA REL FIG A (4318-446)
RING BUSBAR (NOTE 7)
RING FUSES 1/2A
-48V FUSES 30 AMP
48V FUSES 0-5A
-48V FUSES 0-30A
(SPARE)
REF GRD BUS
REF FUSES 1-1/3A
1562-117 CA
(3)1/0
2/0
86A
BUSBAR
BAT BUS 4318-446 FUSE PNL
BAT BUS 4316-713 FUSE PNL
BAT BUS 4316-713 FUSE PNL
5821-033
1292N1
D
LORAIN PRODUCTS CORPORATION
BLOCK WIRING DIAGRAM FOR 48 VOLT TYPE 4 POWER DISTRIBUTION BAY WITH SINGLE FREQUENCY RINGING
E GARTON 2-29-80
DO NOT SCALE DWG.
T-5821-033
SHEET 4 OF 5



NOTES:

1. ALL COLORED LEADS NOT OTHERWISE SPECIFIED TO BE 20 GA.
2. ø - INDICATE LEADS RUN BY INSTALLER.
3. SEE ASSOCIATED EQUIPMENT INSTRUCTION MANUALS, POWER DATA SHEETS OR CIRCUITS FOR COMPLETE ALARM TERMINATIONS AND OPTIONS AVAILABLE. ONE SET OF COMMON ALARM LEADS FOR THE SYSTEM IS PROVIDED ON TB1 OF THE ALARM PANEL.
4. PROVIDE 6' INPUT CORD WITH LOCKING TYPE PLUG CONNECTED FOR 208 VOLT INPUT.
5. REMOTE TRANSFER IS ACTUATED BY A MOMENTARY GROUND TO THE (TR1) OR (TR2) LEAD. (NOT CONNECTED)
6. WIRE L.V. DISC LAMP ON 4377-121 ASSEMBLY AS SHOWN ON THIS DRAWING.
7. REMOVE THE 22GA BROWN AND 10GA STRAPS TO THE TWO ROWS OF 0-5A FUSES ON 4318-446 FUSE PANEL AND CONNECT 0-5A FUSES FOR RING DISTRIBUTION AS SHOWN PER THIS DRAWING. CONNECT THE ALARM RESISTOR TO THE 0-30A FUSES ONLY.
8. CONNECT FUSES F31 THRU F46 TO ODD NUMBERED TERMINALS 1 THRU 31; GROUND JUMPERS TO EVEN NUMBERED TERMINALS 2 THRU 32 OF RING TERM BLOCK ON PDB.

TOOL RECORD

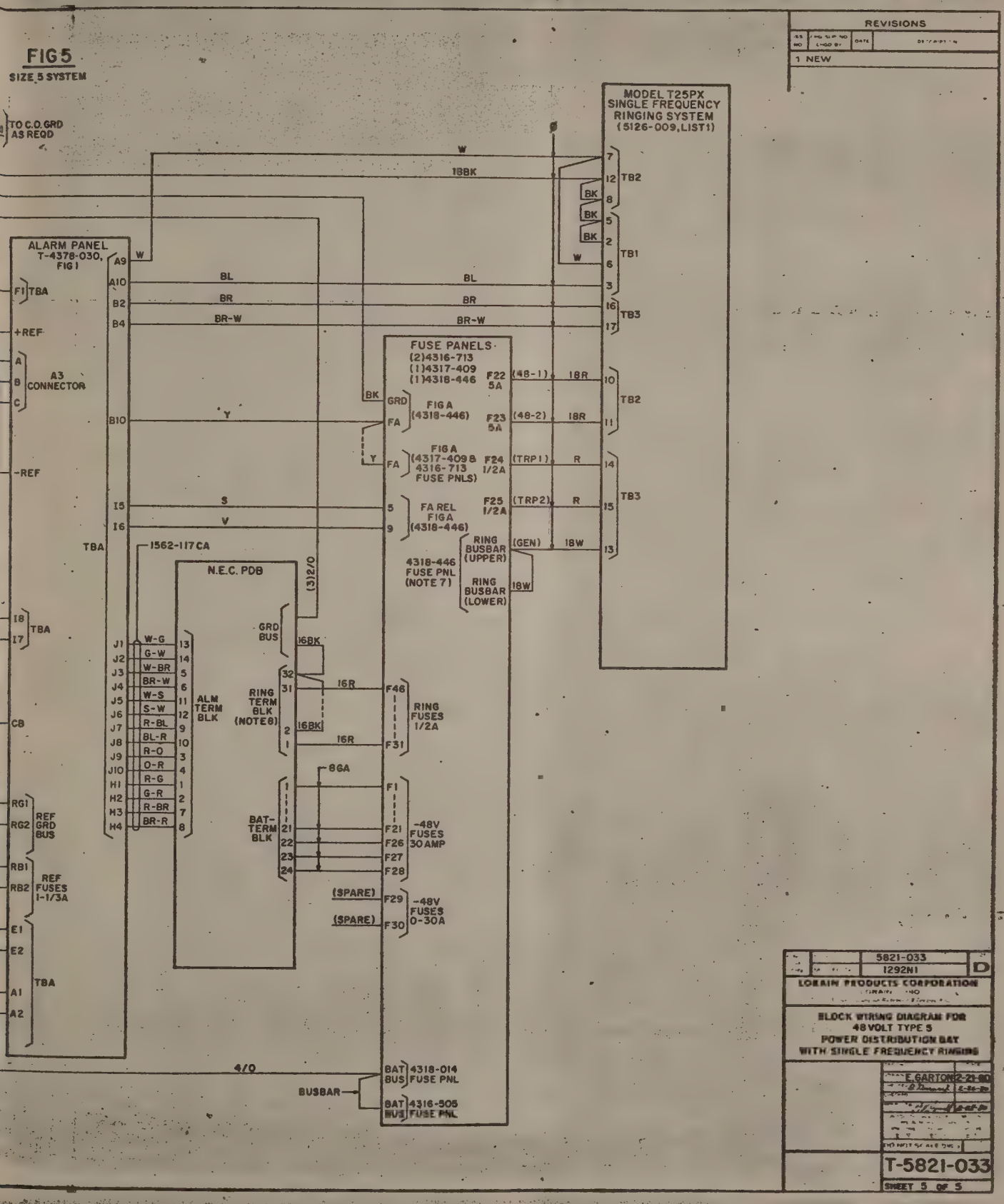
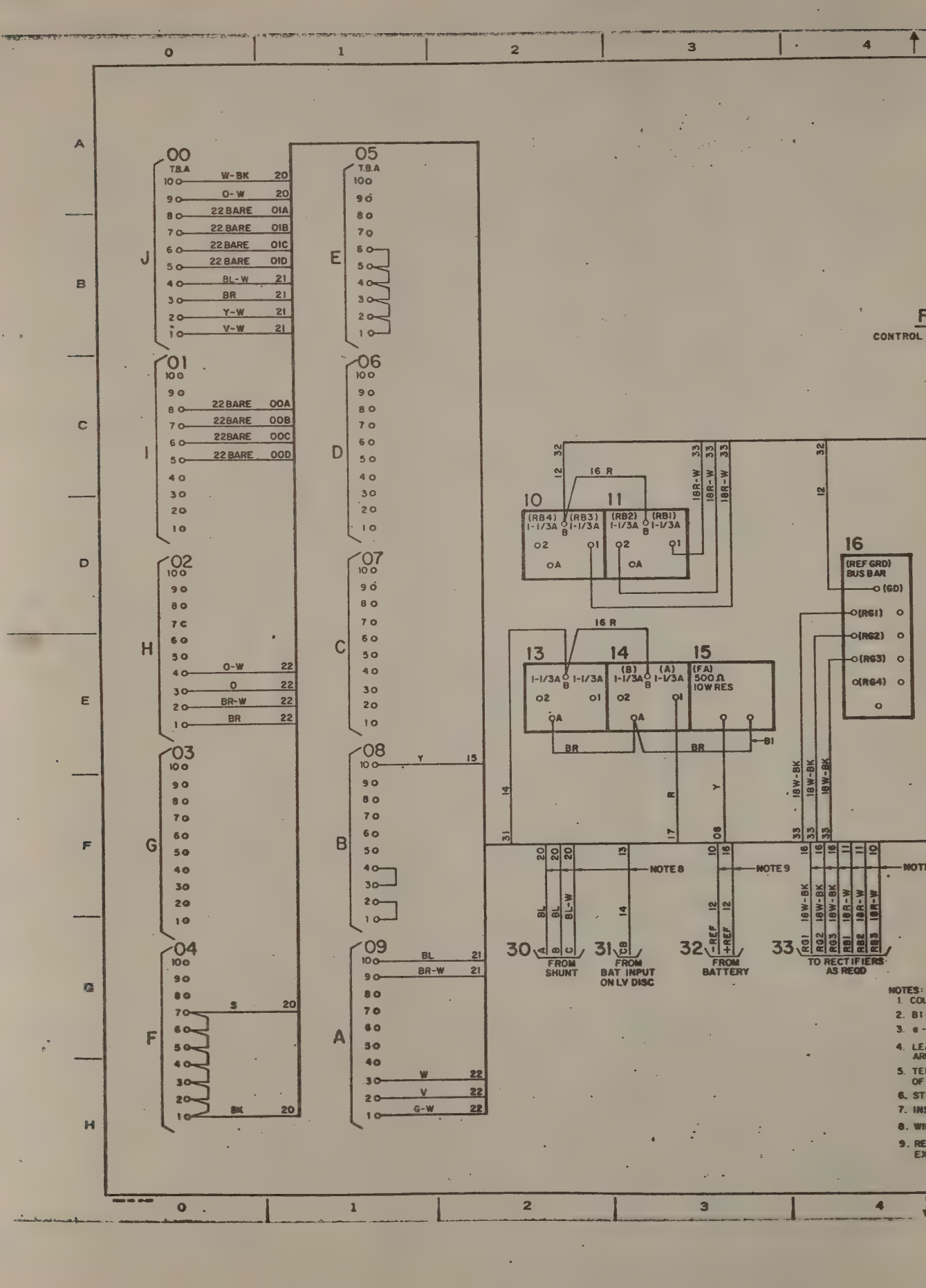


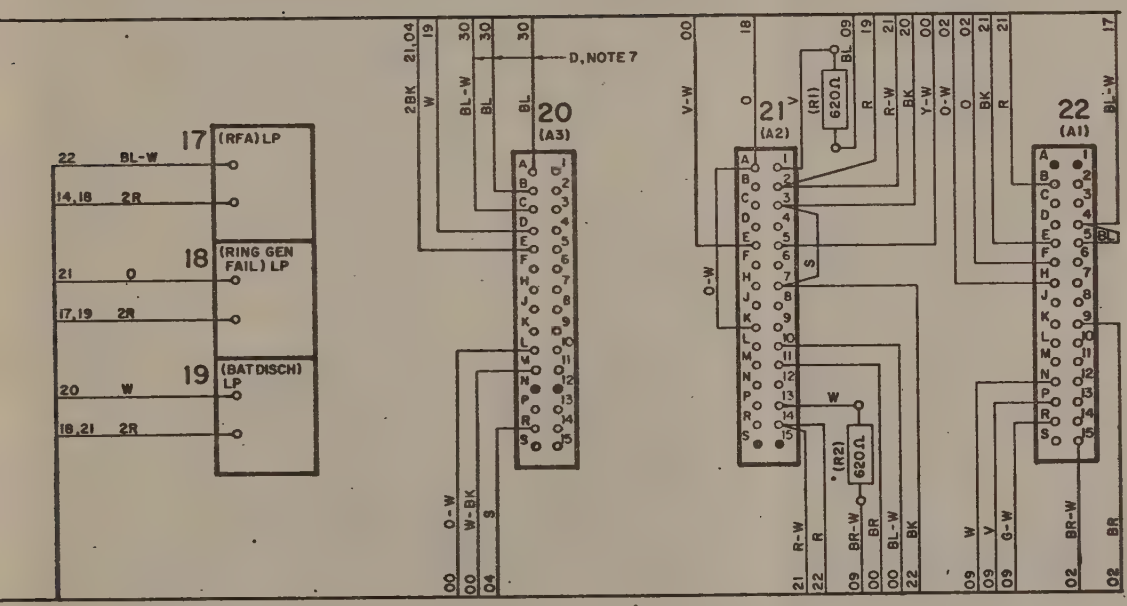
FIG 5
SIZE 5 SYSTEM
REVISIONS
1 NEW
TO C.O. GRD AS REQD
MODEL T25PX SINGLE FREQUENCY RINGING SYSTEM (5126-009, LIST 1)
TB2
TB1
TB3
ALARM PANEL T-4378-030, FIG 1
A3 CONNECTOR
TBA
+REF
-REF
CB
REF GRD BUS
REF FUSES 1-1/3A
FUSE PANELS (2)4316-713 (1)4317-409 (1)4318-446
FIG A (4318-446)
FIG A (4317-409 & 4316-713 FUSE PNLS)
FA REL FIG A (4318-446)
RING BUSBAR (UPPER)
RING BUSBAR (LOWER)
4318-446 FUSE PNL (NOTE 7)
1562-117 CA
N.E.C. PDB
ALM TERM BLK
RING TERM BLK (NOTE 8)
BAT-TERM BLK
GRD BUS
RING FUSES 1/2A
-48V FUSES 30 AMP
-48V FUSES 0-30A
(SPARE)
86A
BUSBAR
BAT BUS 4318-014 FUSE PNL
BAT BUS 4316-505 FUSE PNL
5821-033
1292N1
LORAIN PRODUCTS CORPORATION
BLOCK WIRING DIAGRAM FOR 48 VOLT TYPE 5 POWER DISTRIBUTION BAY WITH SINGLE FREQUENCY RINGING
E. GARTON 2-21-80
T-5821-033
SHEET 5 OF 5


00
T.B.A
W-BK 20
O-W 20
22 BARE 01A
22 BARE 01B
22 BARE 01C
22 BARE 01D
BL-W 21
BR 21
Y-W 21
V-W 21
01
22 BARE 00A
22 BARE 00B
22 BARE 00C
22 BARE 00D
02
O-W 22
O 22
BR-W 22
BR 22
03
04
S 20
BK 20
05
T.B.A
06
07
08
Y 15
09
BL 21
BR-W 21
W 22
V 22
G-W 22
10
(RB4) I-1/3A
(RB3) I-1/3A
11
(RB2) I-1/3A
(RB1) I-1/3A
16 R
18R-W 33
12
32
13
14
(B) I-1/3A
(A) I-1/3A
15
(FA) 500Ω 10W RES
BR
BI
R
Y
16
(REF GRD) BUS BAR
(GD)
(RG1)
(RG2)
(RG3)
(RG4)
18W-BK
NOTE 8
NOTE 9
30
FROM SHUNT
31
FROM BAT INPUT ON LV DISC
32
FROM BATTERY
33
TO RECTIFIERS AS REQD
RG1 18W-BK
RG2 18W-BK
RG3 18W-BK
RB1 18R-W
RB2 18R-W
RB3 18R-W
CONTROL
NOTES:
1. CO
2. BI
3. e
4. LE AR
5. TE OF
6. ST
7. IN
8. WI
9. RE EX

REVISIONS			
SER	CHG'D BY / ENG. RLSE NO.	DATE	DESCRIPTION
1 M	NEW	BP JUN 9 1989	

G 1

ALARM WIRING



ED LEADS TO BE 22 GA UNLESS OTHERWISE SPECIFIED.
ERMINAL NEAREST PANEL.
ADS INSULATED WITH SLEEVING.
S SHOWN TERMINATED IN COMPONENTS WITHOUT TERMINALS
URNISHED WITH COMPONENTS.
INALS ON CARD RECEPTACLE SHOWN SOLID DENOTES LOCATION
LARIZING KEY.
PS ON T.B.A. TO BE 22GA. BARE.
LATE TERMINALS A, B AND C OF (A3) CONNECTOR WITH SLEEVING.
G IS TO BE RUN WHEN EQUIPMENT IS MOUNTED IN BAY.
IFIER REFERENCE LEADS RUN TO BATTERY BY INSTALLER
PT WHEN RJ12F50 RECTIFIERS ARE USED.

FIRST USED ON MODEL 1292MI

WIRING DIAGRAM

ALARM PANEL

48 VOLT OPERATION

DESIGN		ISS. 1
DRAWN BY E L GARTON	DATE 1-16-80	
CHECKED BY Bob Dorsack	DATE 1-17-80	
CHECKED BY	DATE	
APPROVED BY	DATE 1-17-80	
RATING STANDARD		

T-4378-030

LORAIN PRODUCTS CORPORATION
LORAIN, OHIO
LORAIN PRODUCTS (CANADA) LTD., ST. THOMAS, ONTARIO

DWG SIZE D

SHEET 1 OF 1

PRINTED IN U.S.A.

SHEET INDEX

SHEET NO	CONTENTS
1.	SHEET INDEX CIRCUIT NOTES SUPPORTING INFORMATION INFORMATION NOTES
2.	FIG 1 RECT, 12A, SINGLE PHASE FIG 2 RECT, 50A, SINGLE PHASE FIG 3 RECT, 100A, THREE PHASE FIG 4 RECT, 200A, THREE PHASE FIG 5 RECT TERM AND DISCHARGE SHUNT FIG 6 -48VOLT BATTERY FIG 7 GROUND BAR FIG 8 LOW VOLTAGE DISCONNECT CKT FIG 9 -48VOLT DISTRIBUTION FIG 10 CONTROL FUSES
3.	FIG 11 T25PX RING GENERATOR FIG 12 RING DISTRIBUTION FIG 13 N.E.C. PDB FIG 14 RING PLANT ALARM FIG 15 RECT FAIL ALARM FIG 16 FUSE ALARM CKT FIG 17 BATTERY DISCHARGE ALARM

CIRCUIT NOTES

101.

FEATURE OR OPTION		PROVIDE FIG	NOTE	QUANT
48VOLT RECTIFIER	12AMP, 1 Ø	1	103, 104	3 PER SYSTE
	50AMP, 1 Ø	2		2 PER SYSTE
				3 PER SYSTE
	100AMP, 3 Ø	3		2 PER SYSTE
	200AMP, 3 Ø	4		2 PER SYSTE
48VOLT PLANT		5, 7-17		1 PER SYSTE
48VOLT BATTERY		6		PROVI BY CUSTO AS RE
DISTRIBUTION	-48VOLT	(9)	102	
	RING	(12)		

SUPPORTING INFORMATION

CATEGORY	NO
EQUIPMENT DRAWING	J-5821-033
WIRING DIAGRAM	T-5821-033

102. DISTRIBUTION FUSES SHOWN ARE TYPICAL, QUANTITY AND CAPACITY IS PROVIDED BASED ON SYSTEM REQUIREMENTS.

103. RECTIFIERS PROVIDED WITH TYPE I SYSTEM DO NOT HAVE PROVISIONS FOR EXTENDED REFERENCE LEADS. REFERENCE FUSES AND CONNECTIONS TO THE BATTERY ARE NOT REQUIR WITH TYPE I SYSTEM.

104. THE HIGH-LOW VOLTAGE ALARM ASSEMBLY FOR THE RJ12FS RECTIFIERS IN SYSTEM 1 IS ONLY REQUIRED IN ONE RECTIFIE AND WILL BE FURNISHED IN RECT NO. 0.

INFORMATION NOTES

301. UNLESS OTHERWISE SPECIFIED, RESISTANCE VALUES ARE IN OHMS, CAPACITANCE VALUES ARE IN MICROFARADS AND FUSES ARE IN AMPERES

302. ALL RELAYS ARE SHOWN IN THE RELEASED POSITION.

303. LEAD AND EQUIPMENT DESIGNATIONS FOLLOWED BY A DASH (-) INDICATE CIRCUIT AND EQUIPMENT NUBERING: 1 FOR 1ST (FIGURE, CIRCUIT OR EQUIPMENT) 2 FOR 2ND ETC.

REVISIONS			
ISS NO.	CHKD BY — CHG ELP NO.	DATE	DESCRIPTION
1	NEW		

	DESIGN D.GURNACK	ISS. 1
	DRAWN BY E.GARTON	DATE 2-28-80
	CHECKED BY Ed Gurnack	DATE 3-27-80
	CHECKED BY	DATE
	APPROVED BY C.M. Bennett	DATE 3-31-80
	RATING STANDARD (N.E.C. ONLY)	

POWER SYSTEMS

CHARGE AND DISCHARGE CIRCUIT
48VOLT POWER DISTRIBUTION EQUIPMENT
WITH 25WATT SINGLE FREQUENCY RINGING

MODEL 1292N1

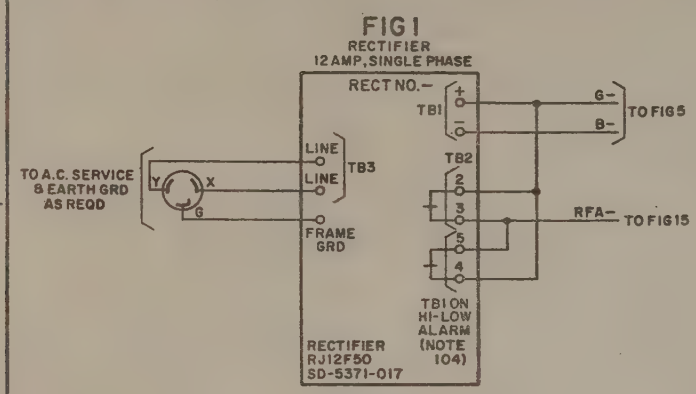
SD-5821-033

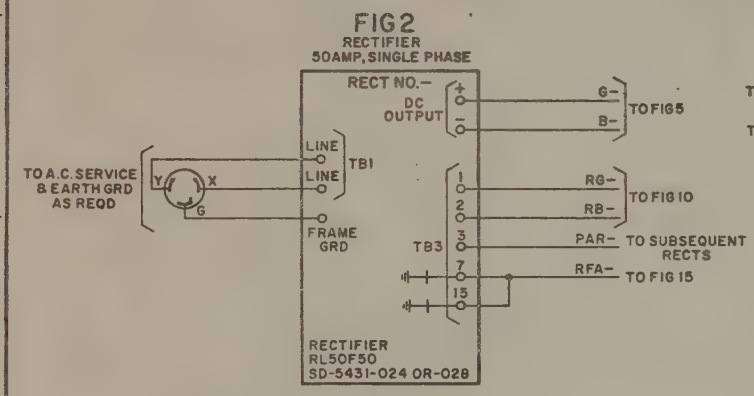
LORAIN PRODUCTS CORPORATION
LORAIN, OHIO
LORAIN PRODUCTS (CANADA) LTD., ST. THOMAS, ONTARIO

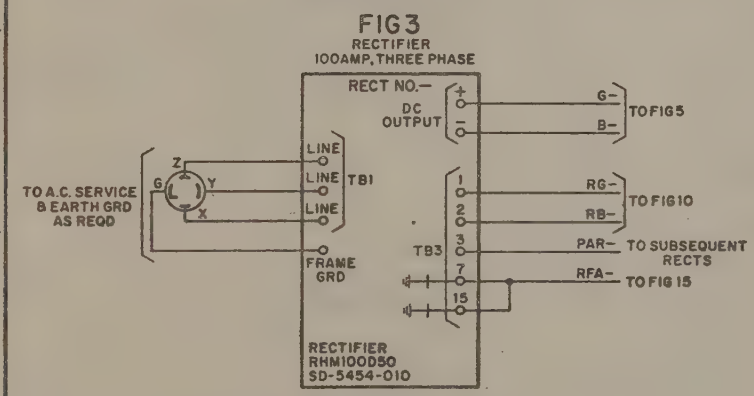
DWG SIZE D

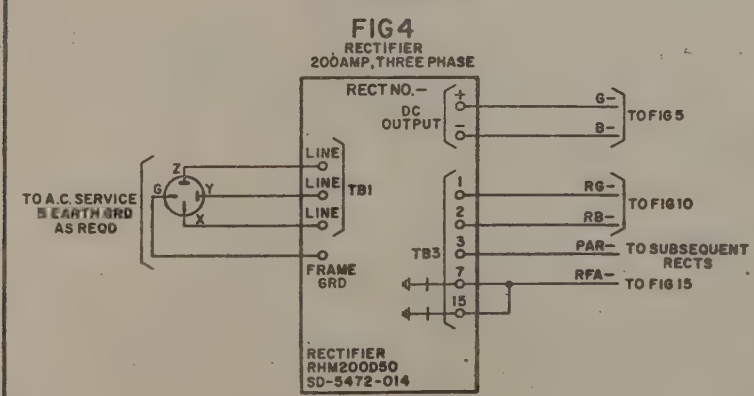
SHEET 1 OF 3

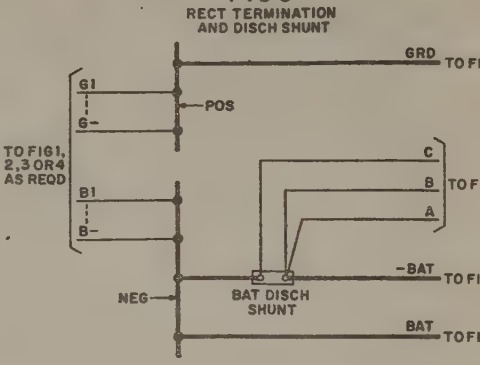
PRINTED IN U.S.A.

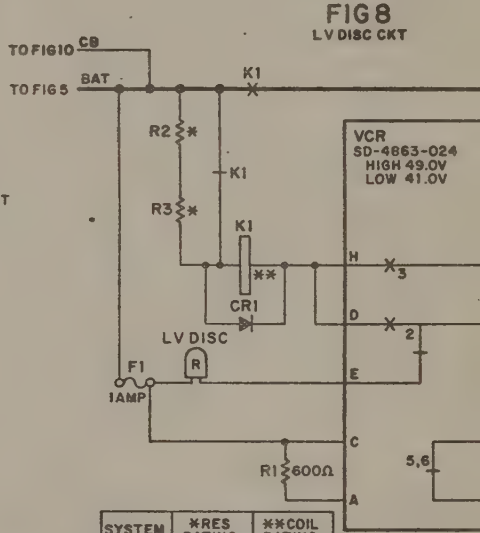




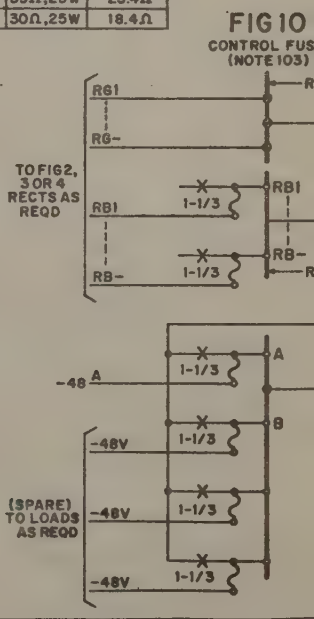








SYSTEM	*RES RATING	**COIL RATING
1, 2 OR 3	50Ω, 25W	35.9Ω
4	39Ω, 25W	25.4Ω
5	30Ω, 25W	18.4Ω



DRAWING ISSUE 1 E.L.G.

FIG 6
-48V BATTERY

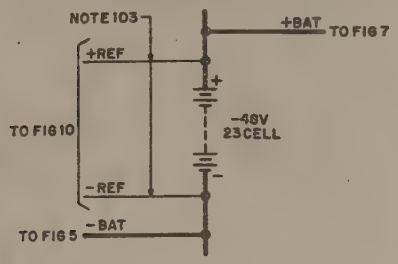


FIG 7
GRD BAR

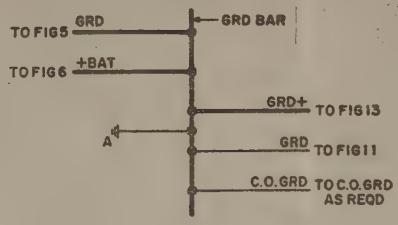
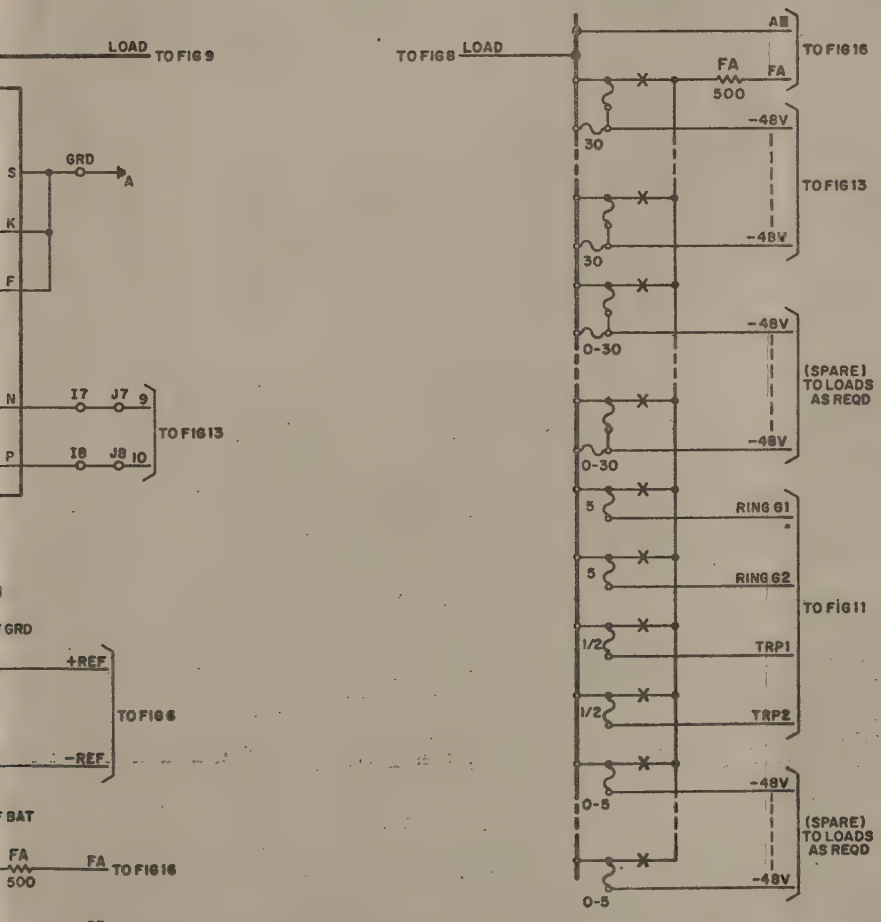


FIG 9
-48VOLT DISTRIBUTION



ISSUE 1

MODEL 1292N1	SD-5821-033
LORAIN PRODUCTS CORPORATION DWG SIZE D	SHEET 2 OF 3
PRINTED IN U.S.A.	

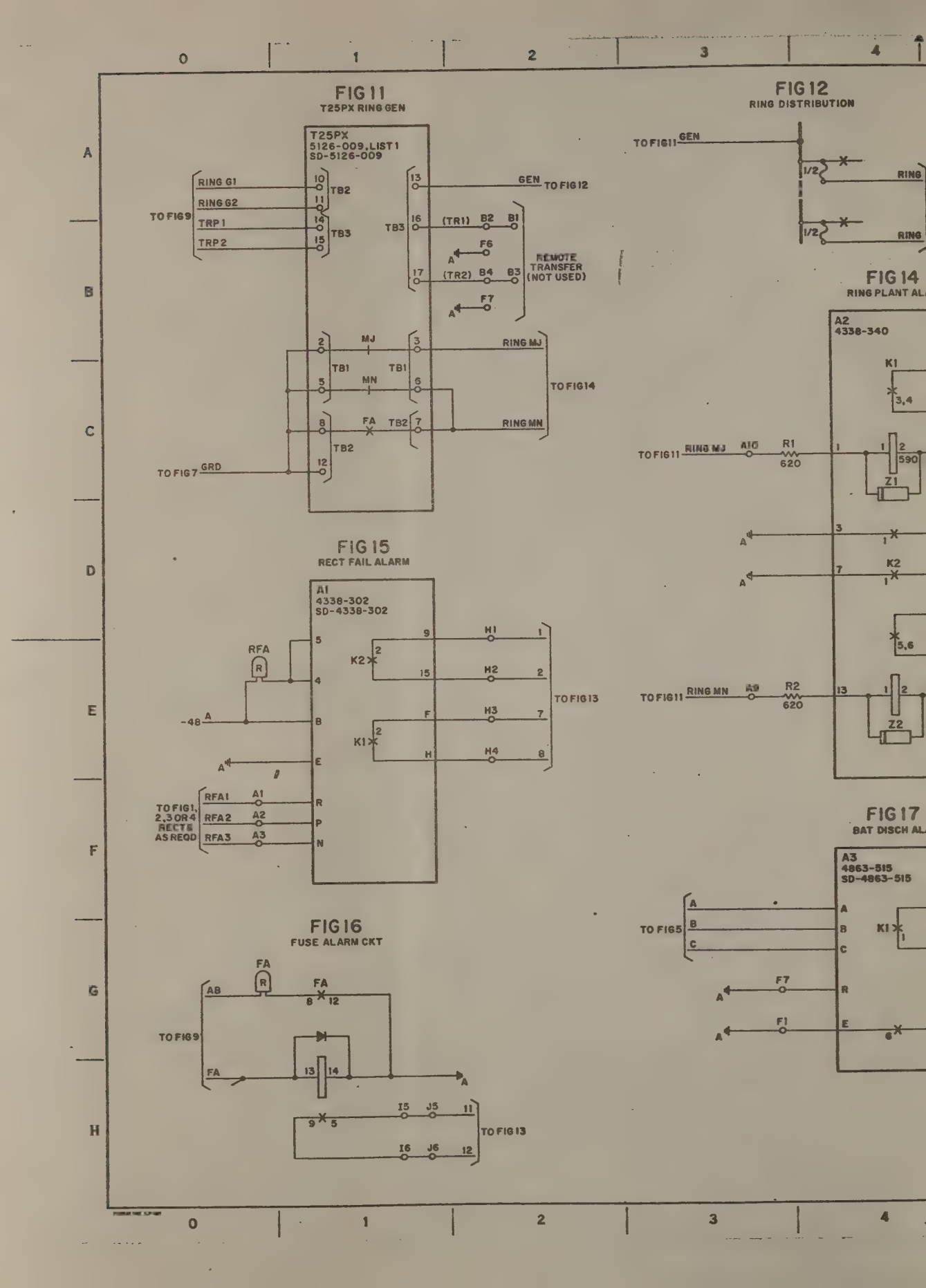
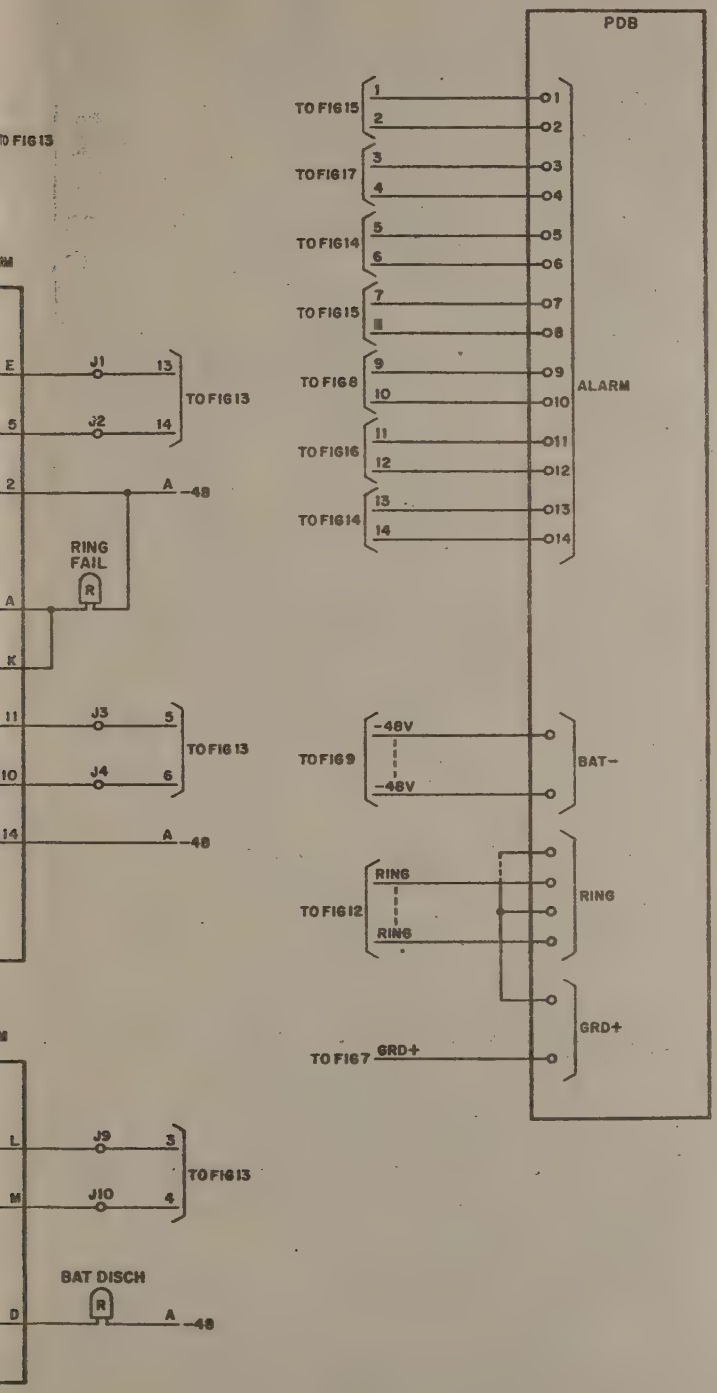


FIG 11
T25PX RING GEN
T25PX
5126-009, LIST 1
SD-5126-009
RING G1
RING G2
TRP 1
TRP 2
TB2
TB3
TO FIG 9
GEN
TO FIG 12
(TR1) B2 B1
(TR2) B4 B3
F6
F7
REMOTE TRANSFER (NOT USED)
MJ
MN
FA
RING MJ
RING MN
TO FIG 14
GRD
TO FIG 7
FIG 12
RING DISTRIBUTION
TO FIG 11
GEN
1/2
RING
FIG 14
RING PLANT AL
A2
4338-340
K1
3,4
RING MJ
A10
R1
620
590
Z1
K2
5,6
RING MN
A9
R2
Z2
FIG 15
RECT FAIL ALARM
A1
4338-302
SD-4338-302
RFA
K2
K1
H1
H2
H3
H4
TO FIG 13
-48
RFA1
RFA2
RFA3
TO FIG 1, 2, 3 OR 4 RECTS AS REQD
FIG 16
FUSE ALARM CKT
FA
A8
TO FIG 9
TO FIG 13
FIG 17
BAT DISCH AL
A3
4863-515
SD-4863-515
TO FIG 5
F7
F1

FIG 13
N.E.C. PDB



DRAWING ISSUE
1 E.L.G.

MODEL 1292N1	SD-5821-033
LORAIN PRODUCTS CORPORATION — DWG SIZE D	SHEET 3 OF 3
PRINTED IN U.S.A.	

1

CPS-CONVR ALM
CONVERTER ALARM

COMPONENT LIST

DIODE

DESIG	CODE
(9)CR1-CR9	(2812-310) IN4813, 200V

RELAY

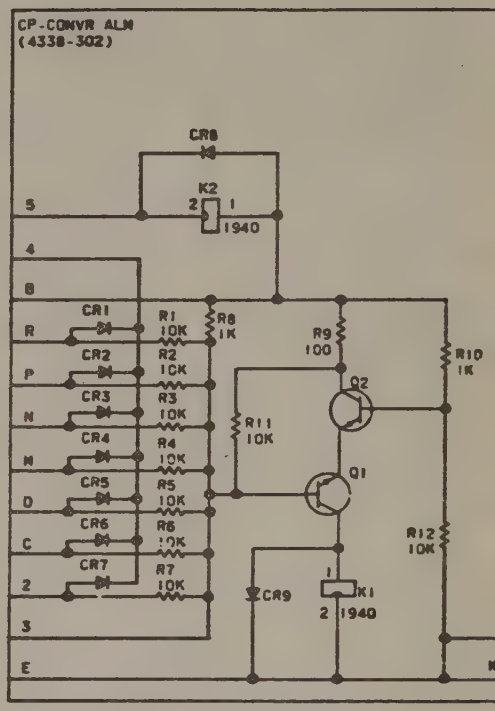
DESIG	CODE
(2)K1,K2	(2543-443) 1940 OHMS

RESISTOR

DESIG	CODE
(9)R1-7, R11,R12	(2637-225) 10K,1/2WATT,5%
(2)R8,R10	(2637-177) 1K, 1/2WATT,5%
R9	(2615-239) 100 OHM, 1/2WATT

TRANSISTOR

DESIG	CODE
Q1	(2841-100) 2N1711
Q2	(2843-056) 2N3906



INPUT/OUTPUT INFORMATION

INPUT: -48 VOLTS AT 8 WITH RESPECT TO E,GND

OUTPUT: CONTINUITY OR DISCONTINUITY AT J,F,H,L,K,S,6,7,9,10,12,13,14,15.
GROUND AT 8 ON OPERATION OF K1, GROUND AT 11 WITH OPERATION OF K2.

CIRCUIT DESCRIPTION

WITH ONE OR LESS OF ANY RESISTOR R1-R7 CONNECTED TO GND, KEEPS THE POTENTIAL AT THE BASE OF Q1 LOWER THAN THE POTENTIAL AT THE BASE OF Q2. Q1 AND Q2 REMAINS IN THE TURNED OFF STATE. RELAY K1 REMAINS DE-ENERGIZED WITH NO CONTINUITY BETWEEN TERMINALS J-F-H AND L-K-S, WITH CONTINUITY BETWEEN TERMINALS K-6, WITH NO GROUND AT 8.

WHEN HOPE THAT ONE RESISTOR R1-R7 IS CONNECTED TO GND THE POTENTIAL AT THE BASE OF Q1 IS HIGHER THAN THE POTENTIAL AT THE BASE OF Q2. K1 IS ENERGIZED WITH CONTINUITY AT TERMINALS J-F-H AND L-K-S AND NO CONTINUITY AT TERMINALS K-6, WITH GROUND ON 8.

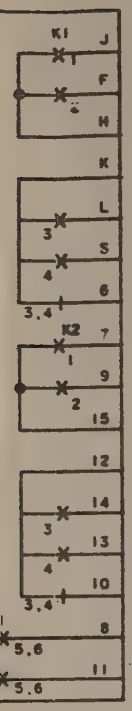
WITH GROUND APPLIED AT R,P,N,M,D,C OR 2, GROUND WILL BE ON 4 FOR CONNECTING TO TERM 5, DIRECTLY OR THRU AN EXTERNAL CUT-OFF CKT, TO RELAY K2. RELAY K2 OPERATED PROVIDES CONTINUITY BETWEEN TERMINALS 7-9-15, 12-13-14 AND NO CONTINUITY AT 12 AND 10. GROUND WILL BE ON TERM 11.

TERMINAL 3 PROVIDES A CONNECTION FOR INCREASING THE CIRCUIT TO BEYOND 7 CONVERTER CIRCUITS WITH USE OF RESISTOR DIODE ASSY 4287-018.

REVISIONS			
1			NEW

MANUFACTURING REFERENCES

CATEGORY	NUMBER
ASSEMBLY DRAWING	4338-302
CONNECTOR ON FRAME	3876-3.9



SYMBOL
SHOWN IN DETAIL IN FS

NOTES:
1. UNLESS OTHERWISE SPECIFIED, RESISTANCE VALUES ARE IN OHMS.
2. CODES WITHIN PARENTHESES AS (2812-310) REPRESENT LPC PART NUMBERS.
3. POLARIZING NOTCH ON POSITION A AND 1.
4. SEE ASSOCIATED CIRCUITS FOR SPECIFIC SYMBOL AND APPLICATION.
5. TWO NUMBERS LISTED FOR A RELAY CONTACT INDICATE TWO SETS OF CONTACTS CONNECTED IN PARALLEL.
6. MADE FROM P.W. BOARD 3158-528.

FIRST USED ON 1283C1, 1283C2, 1284C2

183-5717, 184-3367	DESIGN D GURNACK
	DRAWN BY D Jones DATE
	CHECKED BY DATE
	APPROVED BY DATE
MAJOR AND MINOR CONVERTER ALARM CIRCUIT FOR USE IN CONVERTER PLANTS (-48 VOLT CONTROL)	APPROVED BY DATE
	RATING STANDARD
	SD-4338-302
LORAIN PRODUCTS CORPORATION LORAIN, OHIO	DWG SIZE D
	SHEET 1 OF 1

COMPONENT LIST

CAPACITORS

	DESIG	CODE
(2)	C1,3	(2713-118) 0.01UF, 100V DC
(2)	C2,4	(2737-134) 10UF, 20V, ELECT.
(2)	C5,6	(2713-132) 0.1UF, 100V DC

DIODE

DESIG	CODE
CR1	(2836-212) 12V, ZENER
CR2	(2812-310) IN4818

DIODE

DESIG	CODE
DS1	(2818-125) LED, RED

INTEGRATED CIRCUITS

	DESIG	CODE
(2)	A3,A4	(2871-103) 741 OP.AMPL

RELAY

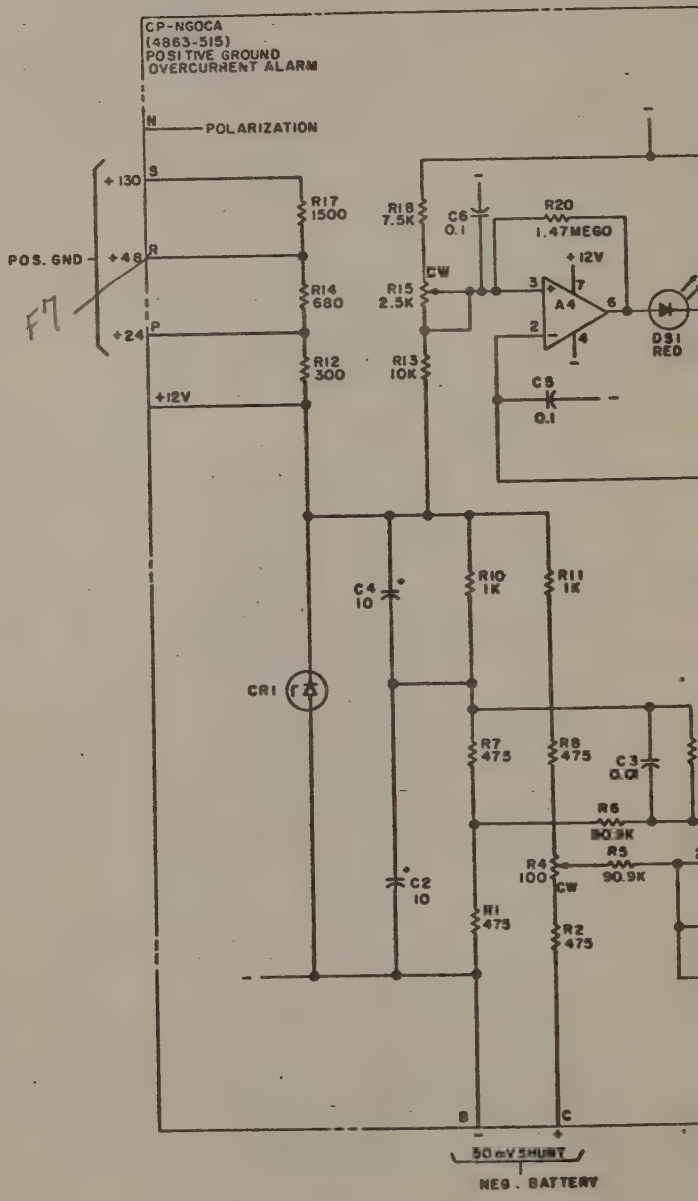
DELAY	CODE
M1	(2543-419) 24V

RESISTORS

	DESIG	CODE
(4)	R1,2,7,8	(2634-582) 475 OHMS, 1/4W, 1%
(2)	R3,9	(2635-787) 1.21 MEGO, 1W, 1%
	R4	(2674-312) 100 OHMS, POT.
(2)	R5,6	(2635-716) 90.9K, 1W, 1%
(4)	R10,11,16,19	(2634-597) 1K, 1/4W, 1%
	R12,	(2651-526) 300 OHMS, 6.5W
	R13	(2634-648) 10K, 1/4W, 1%
	R14	(2651-538) 680 OHMS, 6.5W
	R15	(2683-100) 2.5K, POT.
	R17	(2652-493) 1500 OHMS, 11W
	R18	(2634-642) 7.5K, 1/4W, 1%
	R20	(2635-795) 1.47 MEGO, 1W

TRANSISTOR

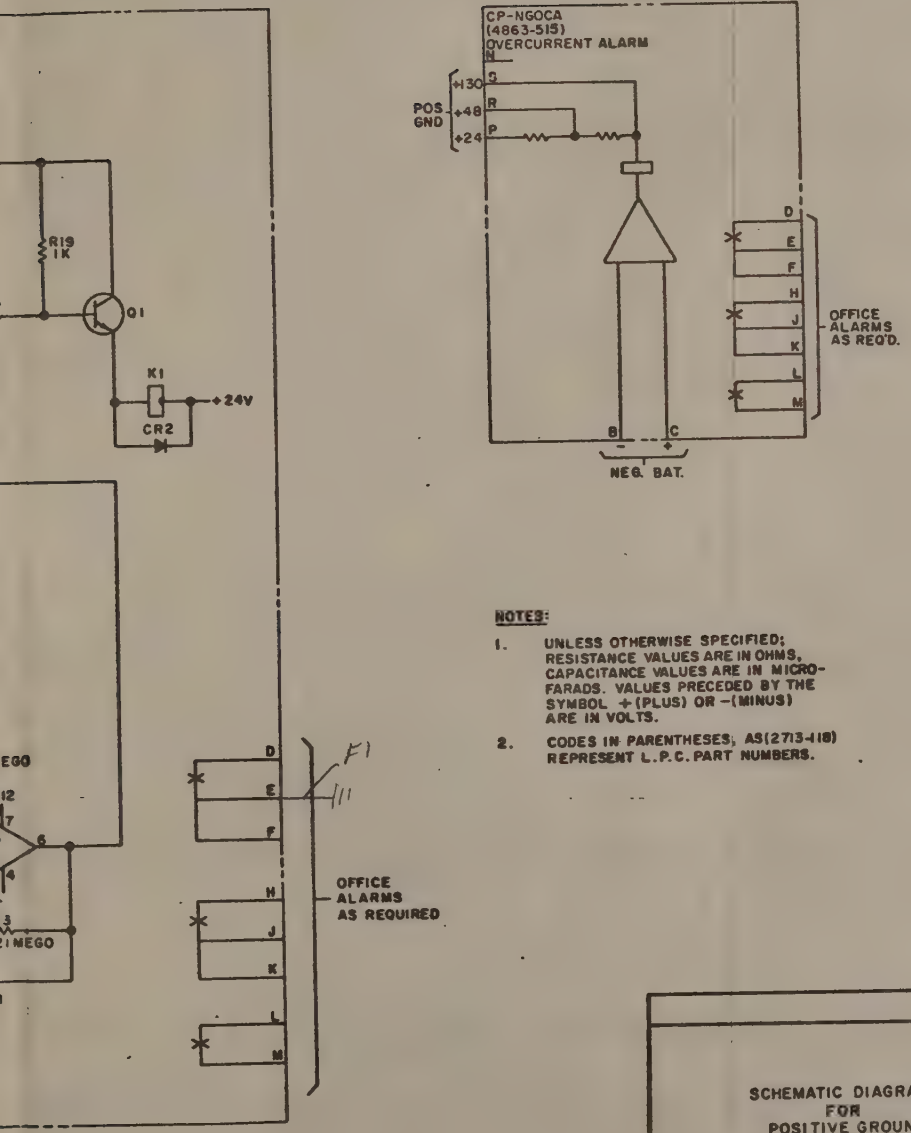
DESIG	CODE
Q1	(2842-020) MPS A06 NPN



REVISIONS			
ISS NO.	CHKD BY / APP'D BY	DATE	DESCRIPTION
2	M	4-10-80	RE-DESIGNED.

MANUFACTURING REFERENCES

CATEGORY	NUMBER
ASSEMBLY DRAWING	4863-515
P.W. BOARD	3157-251
CONNECTOR ON FRAME	3875-319



SYMBOL

NOTES:

1. UNLESS OTHERWISE SPECIFIED; RESISTANCE VALUES ARE IN OHMS, CAPACITANCE VALUES ARE IN MICRO-FARADS. VALUES PRECEDED BY THE SYMBOL + (PLUS) OR − (MINUS) ARE IN VOLTS.
2. CODES IN PARENTHESES, AS(2713-118) REPRESENT L.P.C. PART NUMBERS.

SCHEMATIC DIAGRAM
FOR
POSITIVE GROUND
OVERCURRENT ALARM

DESIGN	T. PETRUNA
ISS.	2
DRAWN BY	J TUTTLE
DATE	4-10-80
CHECKED BY	
DATE	
CHECKED BY	T Petruna
DATE	4-16-80
APPROVED BY	Bill Hamilton
DATE	4-16-80
RATING	STANDARD

SD4863-515

LORAIN PRODUCTS CORPORATION
LORAIN, OHIO
LORAIN PRODUCTS (CANADA) LTD., ST. THOMAS, ONTARIO

DWG SIZE D

SHEET 1 OF 1

CPS
VOLTAG

COMPONENT LIST

DIODE

DESIG		CODE
(2)	CR1A,1B	(2836-212) 12V,1W, ZENER
	CR2	(2835-481) 8.2V, 0.4W, ZENER
(2)	CR3, 4	(2812-310)

RELAY

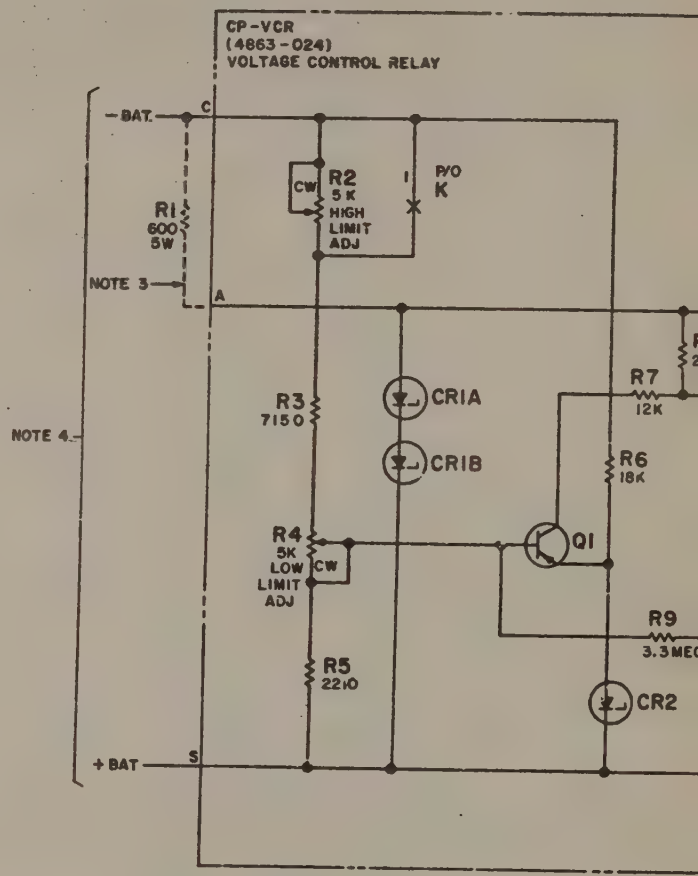
DESIG	CODE
K	(2543-422)

RESISTOR

DESIG		CODE
(2)	R2,4	(2683-076) 5K POTENTIOMETER
	R3	(2635-666) 7150 OHM, 1W, ±1%
	R5	(2635-641) 2210 OHM, 1W, ±1%
	R6	(2615-293) 18K, 1/2 W
	R7	(2615-289) 12K, 1/2W
	R8	(2615-271) 2200 OHM, 1/2W
	R9	(2615-347) 3.3 MEGO, 1/2W
	R10	(2615-287) 10K, 1/2W
	R11	(2615-267) 1500 OHM, 1/2W
	R12	(2615-295) 22K,1/2W

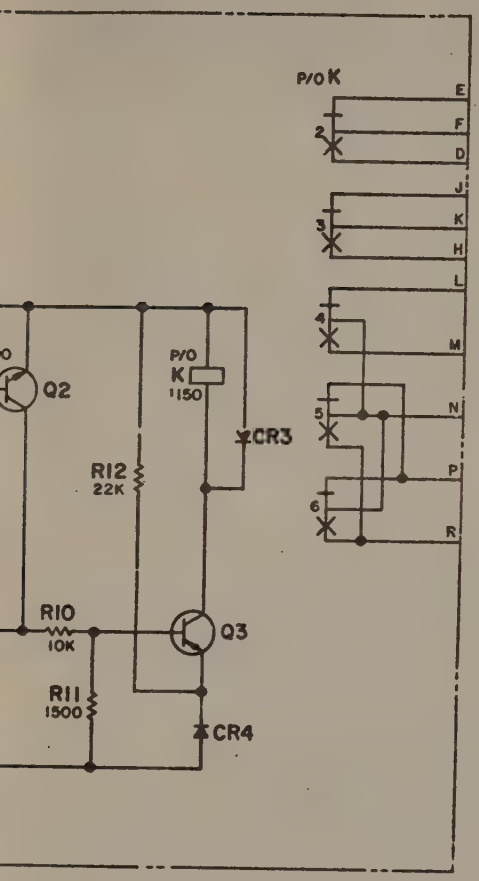
TRANSISTOR

DESIG		CODE
(2)	Q1, 3	(2843-151)
	Q2	(2841-155)



5 6 7 8 9

VCR
CONTROL
AY



MANUFACTURING REFERENCES

CATEGORY	NUMBER
ASSEMBLY DRAWING	4863-024
P.W. BOARD	3157-113
CONNECTOR ON FRAME	3876-319 OR 4233-370

SYMBOL

SHOWN IN DETAIL IN FS

NOTES:

1. UNLESS OTHERWISE SPECIFIED, RESISTANCE VALUES ARE IN OHMS AND CAPACITANCE VALUES ARE IN MICROFARADS.
2. CODES WITHIN PARENTHESES AS (2836-212) REPRESENT LPC PART NUMBERS.
3. ITEMS SHOWN WITH DOTTED LINES ARE NOT SUPPLIED AS PART OF THIS ASSEMBLY.
4. PROVIDE 1-1/3 AMP FUSE IN EITHER —BAT. LEAD FOR POSITIVE GROUND SYSTEMS OR + BAT. LEAD FOR NEGATIVE GROUND SYSTEMS.
5. POLARIZING NOTCH ON B .

REVISIONS

REV. NO.	CHG. NO.	DATE	DESCRIPTION
5	1833821	30 74	REDRAWN. WAS SD-1856-02 ISS 4
6	183-6929	9-27-79	CR3 & CR4 WERE 2811-204, Q1 WAS 2847-098, Q2 WAS 2841-098, Q3 WAS 2847-100, R2 WAS 2683-072, & R3 WAS 2635-671.

30X

A B C D E F G H

VOLTAGE CONTROL RELAY
FOR 48 VOLT POWER BOARD
TWO LIMITS (OVERLAP)
CONTROL FUNCTION

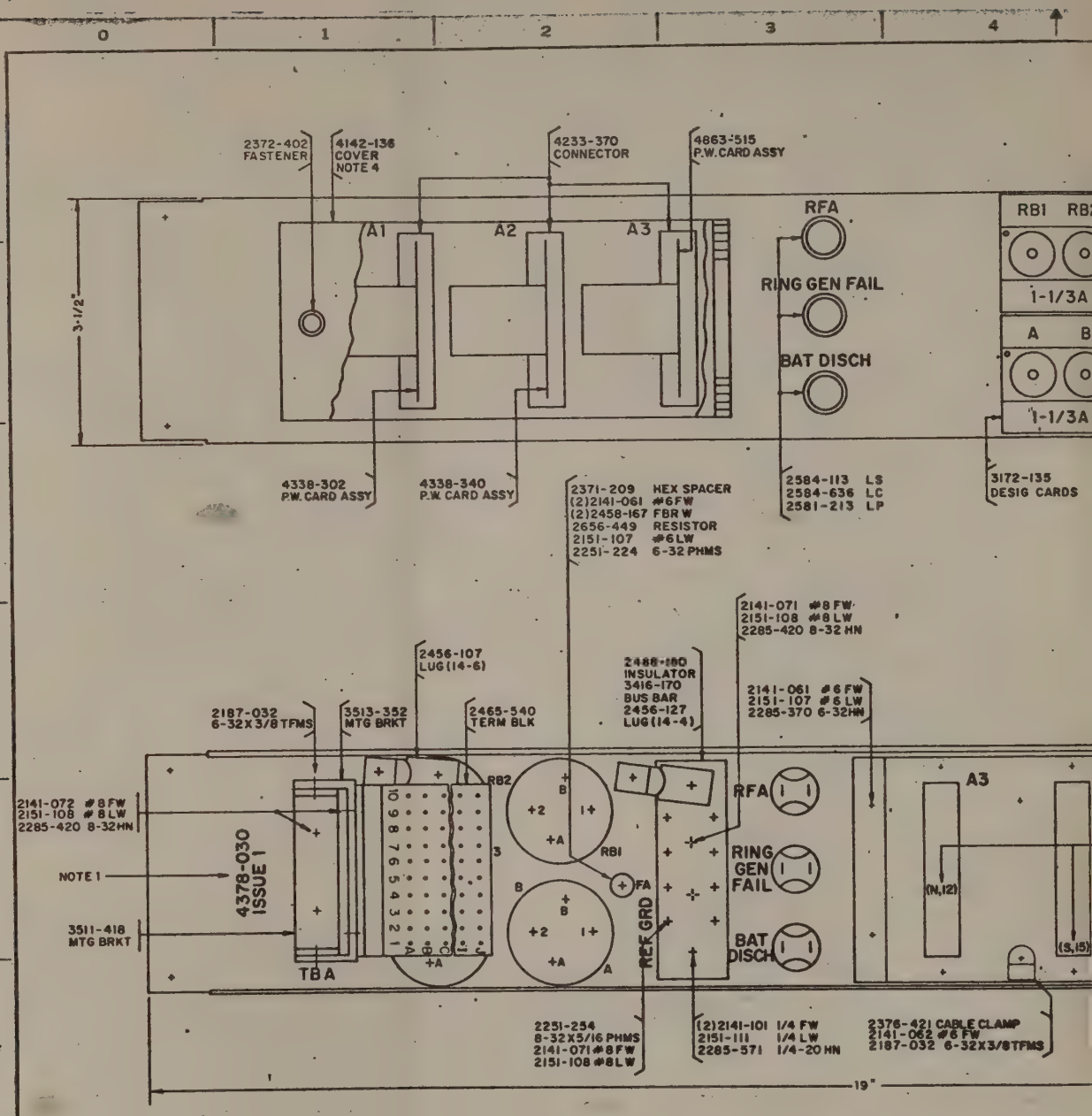
LORAIN PRODUCTS CORPORATION
LORAIN, OHIO
LORAIN PRODUCTS (CANADA) LTD., ST THOMAS, ONTARIO

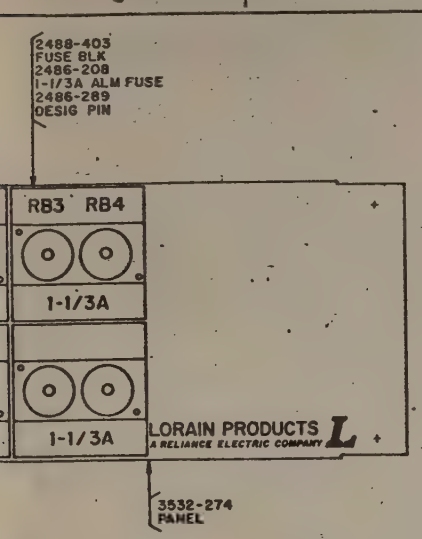
DWG SIZE D

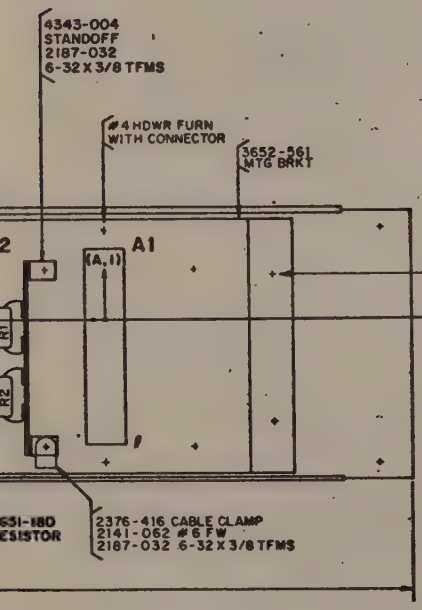
DESIGN ISS 6
DRAWN BY DWG DATE 5-25-65
CHECKED BY D. GURNACK DATE 5-26-65
APPROVED BY DATE
APPROVED BY G. VASEK DATE 5-28-65
RATING STANDARD

SD-4863-024

SHEET 1 OF 1


2372-402 FASTENER
4142-136 COVER NOTE 4
4233-370 CONNECTOR
4863-515 P.W. CARD ASSY
A1
A2
A3
3-1/2"
RFA
RING GEN FAIL
BAT DISCH
RB1
1-1/3A
4338-302 P.W. CARD ASSY
4338-340 P.W. CARD ASSY
2371-209 HEX SPACER
(2)2141-061 #6FW
(2)2458-167 FBRW
2656-449 RESISTOR
2151-107 #6LW
2251-224 6-32 PHMS
2584-113 LS
2584-636 LC
2581-213 LP
3172-135 DESIG CARDS
2141-071 #8 FW
2151-108 #8 LW
2285-420 8-32 HN
2456-107 LUG (14-6)
2488-180 INSULATOR
3416-170 BUS BAR
2456-127 LUG (14-4)
2141-061 #6 FW
2151-107 #6 LW
2285-370 6-32HN
2187-032 6-32X3/8TFMS
3513-352 MTG BRKT
2465-540 TERM BLK
2141-072 #8FW
2151-108 #8LW
2285-420 8-32HN
NOTE 1
4378-030 ISSUE 1
3511-418 MTG BRKT
TB A
RB2
RB1
REF GRD
A3
(N,12)
(S,15)
2251-254 8-32X5/16 PHMS
2141-071 #8FW
2151-108 #8LW
(2)2141-101 1/4 FW
2151-111 1/4 LW
2285-571 1/4-20 HN
2376-421 CABLE CLAMP
2141-062 #6 FW
2187-032 6-32X3/8TFMS
19"





SHOP	INST.	MANUFACTURING NOTES
X		1. STAMP LAST DIGITS OF ASSEMBLY NO. AND ISSUE NO. IN 3/16" CHARACTERS AS SHOWN.
X		2. CONNECT WIRE HARNESS 4935-372 PER T-4378-030
X	X	3. DESIGNATIONS IN PARENTHESES ARE SHOWN FOR REFERENCE ONLY.
X		4. PLACE POWER SYSTEMS LABEL (3184-347) ON INSIDE OF COVER AND FILL IN INFORMATION DURING FINAL TEST.

REVISIONS			
NO.	CHGD BY / CHG. ELP NO.	DATE	DESCRIPTION
1	M	JUN 9 1989	NEW

30X

1846567

DESIGN — SH. 1

DRAWN BY E. L. GARTON — DATE 1-16-90

CHECKED BY D. J. Bennett — DATE 1-17-90

CHECKED BY — DATE

APPROVED BY B. W. Bennett — DATE 1-17-90

RATING STANDARD

ASSEMBLY
ALARM PANEL
48 VOLT OPERATION

4378-030

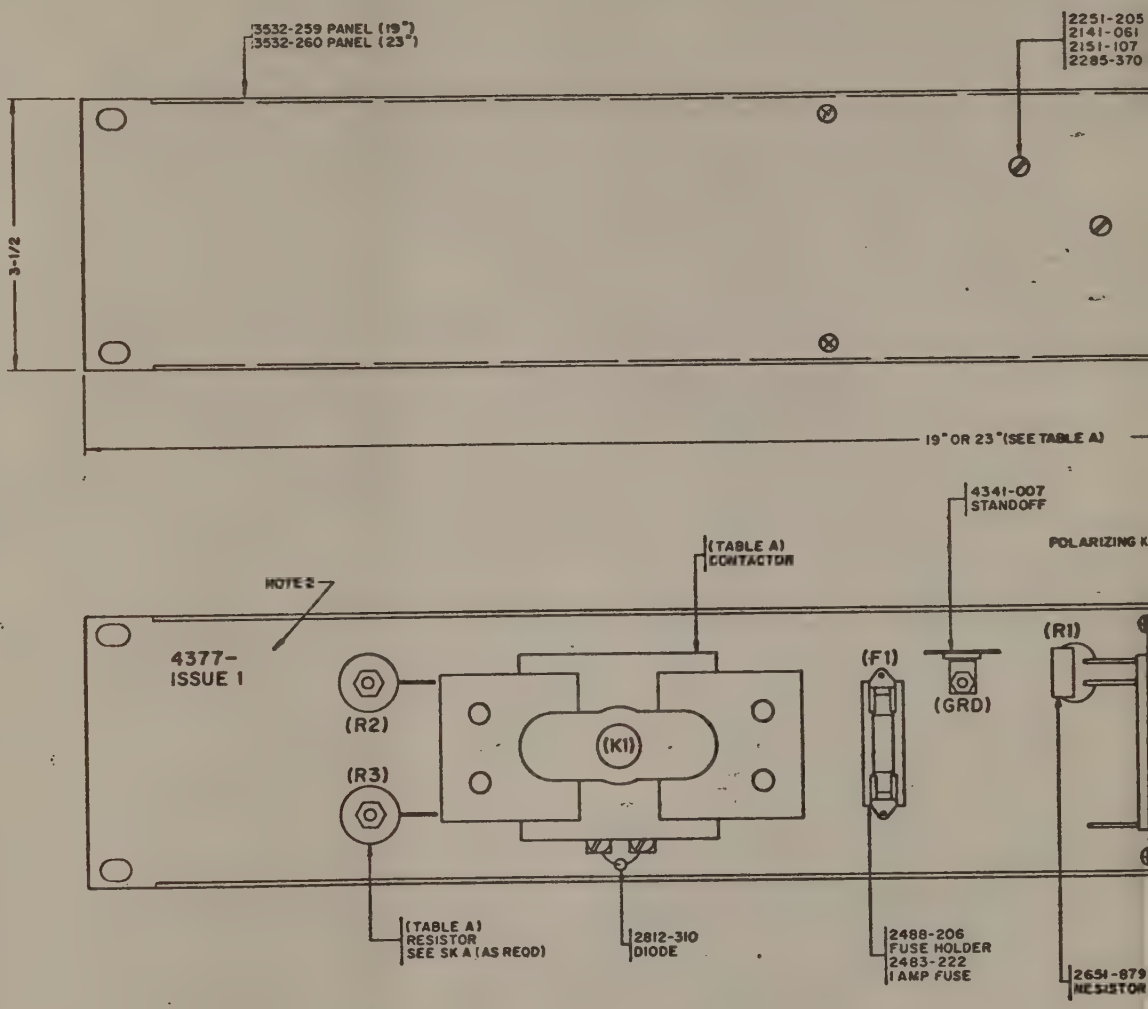
LORAIN PRODUCTS CORPORATION
LORAIN, OHIO
LORAIN PRODUCTS (CANADA) LTD., ST THOMAS, ONTARIO

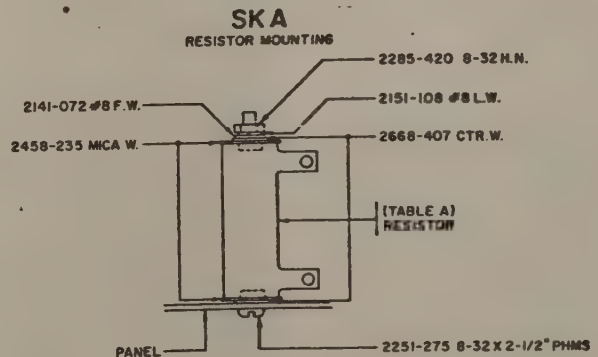
DWG SIZE D

SHEET 1 OF 1

FIRST USED ON MODEL 1292N1

PRINTED IN U.S.A.

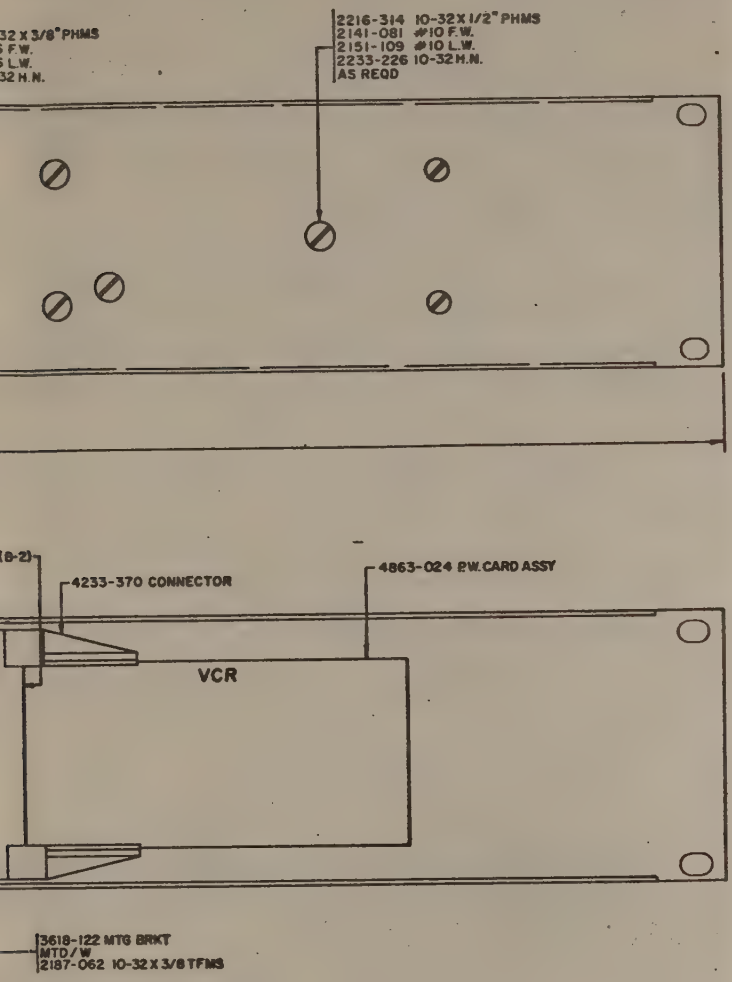




SHOP	INSTL	MANUFACTURI
X		1. ALL STAMPING TO BE 3/16" BLA WISE SPECIFIED.
X		2. STAMP ASSY Nº. & ISSUE Nº. IN POSITION INDICATED.
X	X	3. CONNECT WIRE HARNESS 491 OR FIG.B AS REQUIRED UNLE STANDARD PLANT DRAWING.

TABLE A

AMPERE RATING	19" ASSY. NO.	23" ASSY. NO.	SERIES RESISTOR		CONTACTOR	
			RATING	PT. NO.	COIL RES	PT. NO.
50	4377-113	4377-118	50Ω,25W	2656-509	35.9Ω	2561-019
100	4377-114	4377-119			35.9Ω	2561-026
200	4377-115	4377-120	39Ω,25W	2656-542	25.4Ω	2561-038
400	—	4377-121	30Ω,25W	2656-540	18.4Ω	2561-041



REVISIONS				
ISS NO	CHG LTR NO	BY	DATE	DESCRIPTION
1	M	BP	JAN 3	NEW

NOTES	ENGINEERING NOTES
CHARACTERS UNLESS OTHER-	51. SEE SD-4377-113 FOR CIRCUIT APPLICATION AND VOLTAGE RELAY ADJUSTMENTS.
16" BLACK CHARACTERS IN	
21 PER T-4377-113 FIG.A SUPERSEDED BY	

ASSEMBLY,
CONTACTOR AND CONTROL
FOR
CEMF CELL CONTROL
OR BATTERY DISCONNECT
50-400AMP,-48VOLT
(3-1/2"X19"OR 23" MTG)

LORAIN PRODUCTS CORPORATION
LORAIN, OHIO
LORAIN PRODUCTS (CANADA) LTD., ST THOMAS, ONTARIO

DWG SIZE D

DESIGN	E. GARTON	ISS. 1
DRAWN BY	E. GARTON	DATE 9-14-79
CHECKED BY		DATE 11-15-79
CHECKED BY		DATE
APPROVED BY		DATE 1-3-80

PART NO STANDARD

4377-121
4377-120
4377-119
4377-118
4377-115
4377-114
4377-113

SHEET 1 OF 1

PRINTED IN U.S.A.

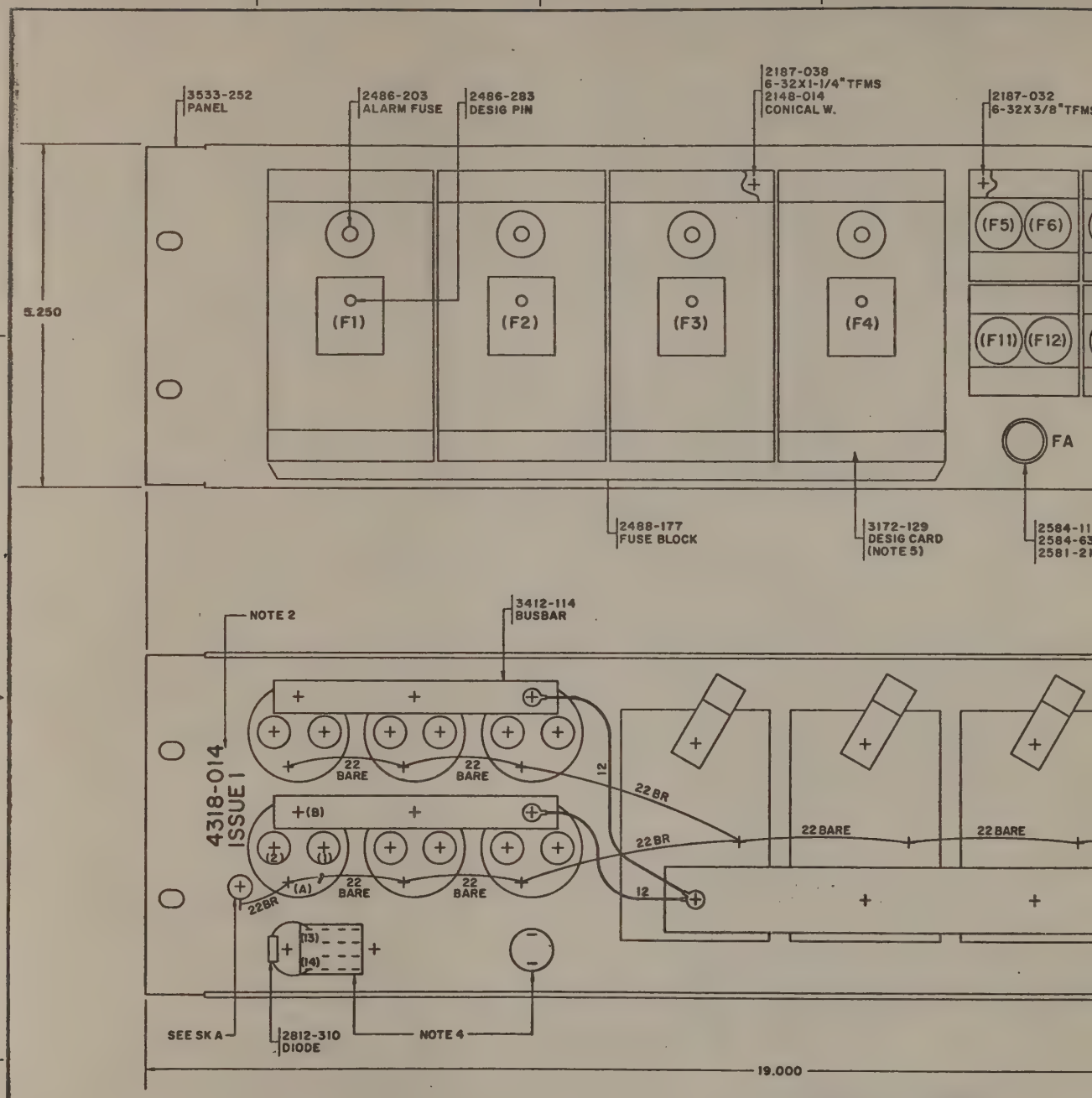


TABLE A				
NON CARTRIDGE FUSES		70 TYPE ALARM FUSES		DESIGNATION PINS
AMP	L.P.C. PART NO.	AMP	L.P.C. PART NO.	L.P.C. PART NO.
3	2483-503	1/4	2486-202 (70F)	2486-282 (VIOLET)
6	2483-505	1/2	2486-205 (70G)	2486-284 (RED)
10	2483-507	3/4	2486-206 (70H)	2486-286 (BROWN)
15	2483-509	1-1/3	2486-208 (70A)	2486-289 (WHITE)
20	2483-511	2	2486-212 (70B)	2486-292 (ORANGE)
25	2483-513	3	2486-215 (70C)	2486-294 (BLUE)
30	2483-515	5	2486-217 (70D)	2486-297 (GREEN)

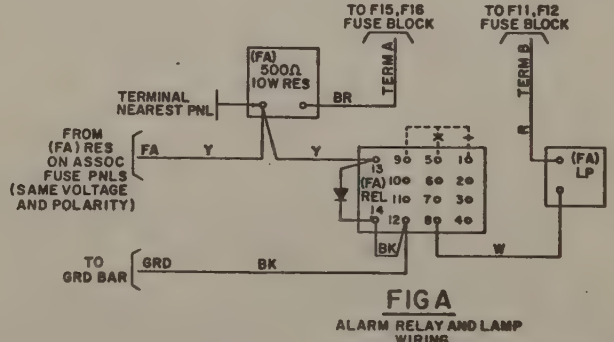
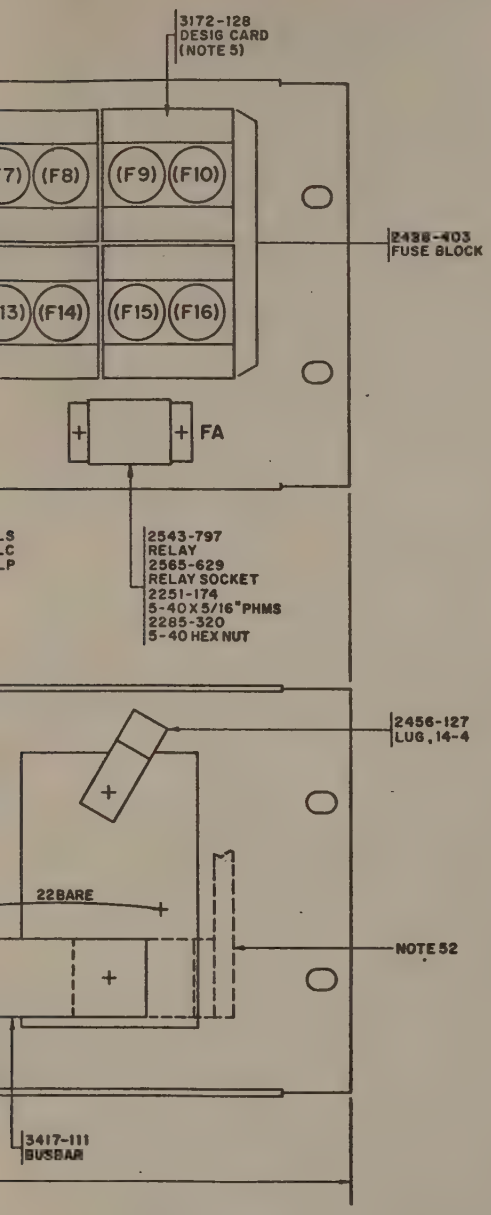
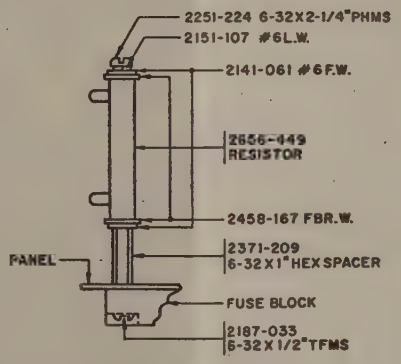


FIG A
ALARM RELAY AND LAMP WIRING





SK A
(FA) RESISTOR MOUNTING

SHOP	INST	MANUFACTURING NOTES
X		1. ALL STAMPING TO BE 3/16" BLACK CHARACTERS UNLESS OTHERWIS SPECIFIED.
X		2. STAMP ASSEMBLY NUMBER AND ISSUE NUMBER IN POSITION SHOWN.
X	X	3. DESIGNATIONS IN ( ) ARE SHOWN FOR REFERENCE ONLY.
X		4. WIRE ALARM RELAY AND LAMP PER FIG A. ALARM WIRING TO BE 22GA.
X	X	5. SEE ASSOCIATED WIRING DIAGRAMS FOR FUSE ASSIGNMENTS AND INSERT DESIGNATION CARDS ACCORDINGLY. SPECIAL DESIGNATION CARDS TO BE PROVIDED PER JOB REQUIREMENTS.

ENGINEERING NOTES

51. ALARM FUSES (2486-203) ARE FURNISHED WITH CARTRIDGE TYPE BLOCKS ONLY. DISTRIBUTION FUSES (CARTRIDGE AND 70 TYPE WITH ASSOCIATED DESIGNATION PINS) ARE NOT FURNISHED. PROVIDE FUSES PER TABLE A AS REQUIRED.

52. ORDER 3627-320 BUSBAR, 3476-102 BUSBAR LINK AND ASSOCIATED 1/4-20 MOUNTING MATERIAL WHEN CONNECTION TO OTHER FUSE PANELS IS REQUIRED.

REVISIONS

ISS NO	CHG SLIP NO / CHGD BY	DATE	DESCRIPTION
1	NEW	BR	APR 10 1980

FIRST USED ON	NEXT ASSY		SIZE
	MODEL NO.	1292N1	D

LORAIN PRODUCTS CORPORATION
LORAIN, OHIO
A Subsidiary of Reliance Electric Co.

ASSEMBLY,
48V FUSE PANEL E/W
(4)0-30AMP, (12)0-5AMP FUSE
POSITIONS, ALARM RELAY AND LAMP
5-1/4" X 19" MTG

MATERIAL:	DESIGN	E. GARTON	DATE
	DRAWN	E. GARTON	1-29-80
	CHECKED		
	CHECKED		
	APPROVED	Art Lamson A	3-5-80

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE ON FRACTIONS ±1/32, DECIMALS ±.031, ANGLES ±1°
DO NOT SCALE DWG. FOR

FINISH:

4318-014

SHEET 1 OF 1

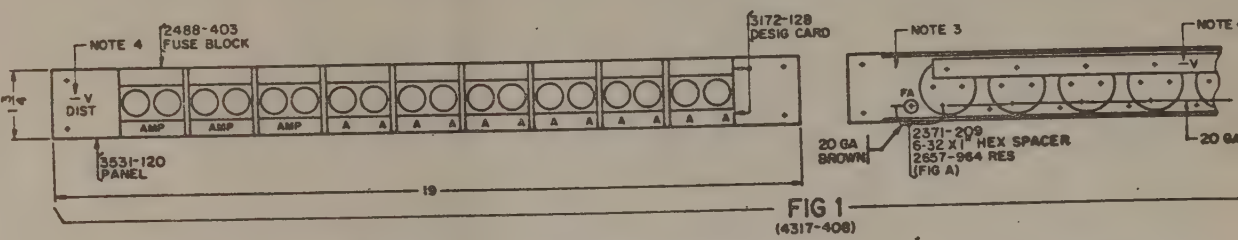


FIG 1
(4317-408)

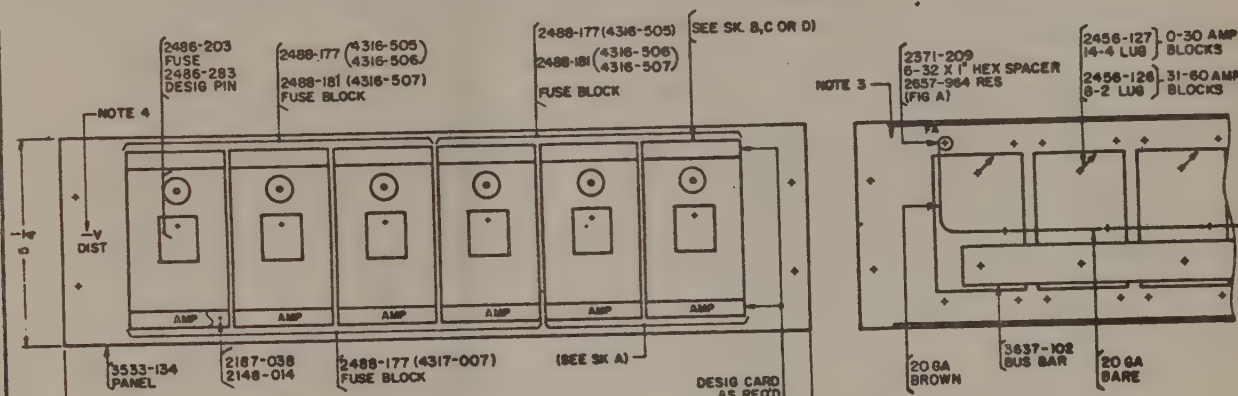
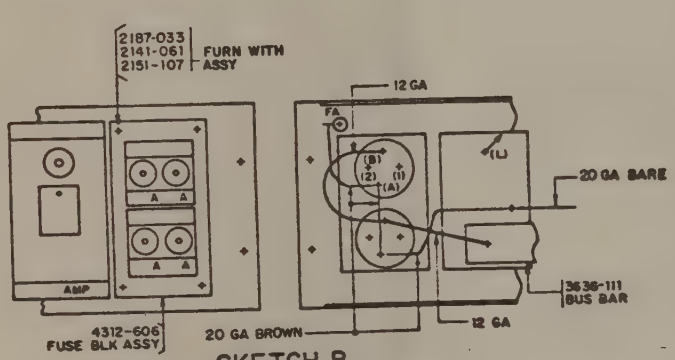
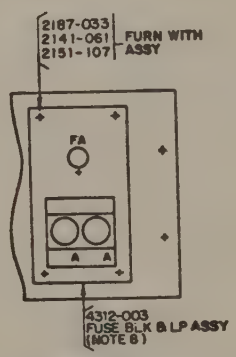


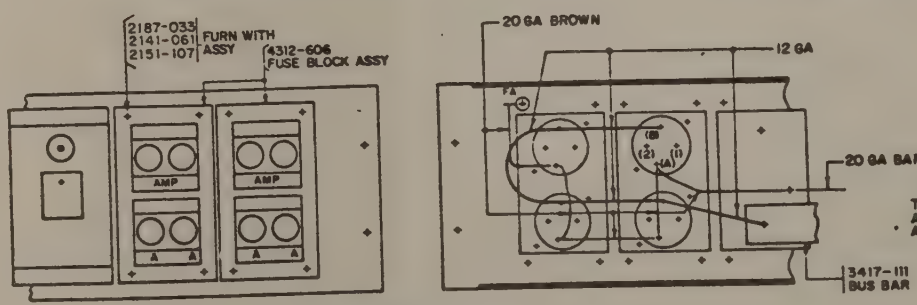
FIG 2
(4316-505,4316-506, 4316-507)



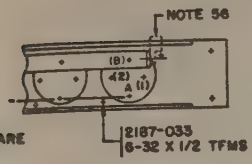
SKETCH B
APPARATUS ARRANGEMENT—4316-705
(OTHERWISE SAME AS 4316-505)

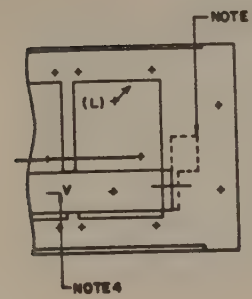


SKETCH C
APPARATUS ARRANGEMENT-4316-708
(OTHERWISE SAME AS FIG 2 & SK B)

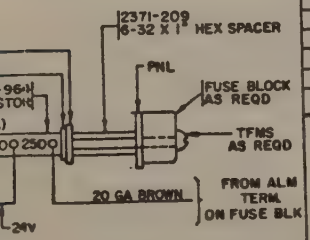


SKETCH A
APPARATUS ARRANGEMENT—4317-007
(OTHERWISE SAME AS 4316-509
(NOTE 54)





KETCH D
CAL FUSE ALARM
AY & LAMP ASSY
55-018 & 4265-021)
(NOTE 55)



IG A
ARM RESISTOR
G & WIRING
FUSE PNL)
OTE 8)

SHOP	INST	MANUFACTURING NOTES
X	X	1. ☒ ITEMS NOT ASSEMBLED, SHIPPED LOOSE
X		2. ALL STAMPING TO BE 3/16" CHARACTERS UNLESS OTHERWISE SPECIFIED.
X		3. STAMP PNL ASSY. AND ISSUE NUMBER IN APPROX POSITION INDICATED.
X		4. STAMP 24V, 48V OR 130V IN ACCORDANCE WITH JOB INFORMATION.
X	X	5. ( ) DENOTES DESIGNATIONS SHOWN FOR REFERENCE ONLY.
X		6. DIST FUSES ARE NOT PROVIDED & SHALL BE FURN PER JOB INFORMATION.
X		7. SEE DWG 0311-912 OR 913 FOR WRG. INFO.
X		8. FOR SPECIAL FUSE ALARM APPLICATIONS DISREGARD FIG A AND FURN ALM WRG PER 0311-913 OR ASSOC JOB DWG.

ENGINEERING NOTES

51 ALM FUSES (2486-203-70K) ARE FURNISHED FOR CART TYPE MTGS ONLY. DIST FUSES (CART TYPE & 70 TYPE WITH ASSOC DESIG PINS) ARE NOT FURNISHED & SHALL BE ORDERED AS REQ'D

70 TYPE ALM FUSES		DESIGNATION PINS
AMPERE	L P C PART NO	L P C PART NO.
1/4	2486-202 (70F)	2486-282 (VIOLET)
1/2	2486-205 (70G)	2486-284 (RED)
3/4	2486-206 (70H)	2486-286 (BROWN)
1-1/3	2486-208 (70A)	2486-289 (WHITE)
2	2486-212 (70B)	2486-292 (ORANGE)
3	2486-215 (70C)	2486-294 (BLUE)
5	2486-217 (70D)	2486-297 (GREEN)

52. SPECIFY OPERATING VOLTAGE AS REQ'D.

53 WHEN 0-30A AND/OR 31-60A FUSE PANELS ARE TO BE INTER-CONNECTED, ORDER (1) 3476-102 LINK & (2) 2276-406, (4) 2141-101(2) 2151-111, & (2) 2285-570 1/4-20 MTG MATL.

54. WHEN 4317-007 FUSE PANEL IS TO BE INTER-CONNECTED WITH OTHER FUSE PNL(S), ORDER (1) 3627-320 BUS BAR & (2) 2276-406, (4) 2141-101, (2) 2151-111, & (2) 2285-570 1/4-20 MTG MATL.

55 WHEN FUSE PNL IS TO BE MODIFIED FOR FUSE ALARM LAMP & RELAY ASSY SPECIFY VOLTAGE & POLARITY.

56. ORDER INPUT LUG KIT PER TABLE A AS REQD.

REDRAWN & REVISED ASSY 43'6-705, NOTE 9 & 55 ADDED. CHANGE ORDER 14214 5-5-65

PY			8

ASSY. NO. 4316-708 ADDED. 4316-705, ITEM 19 DELETED, REPLACED WITH ITEM 20. NOTE 9 REVISED.

CHANGE ORDER 15963 7-19-66

T.A.			9

NOTE 9 REMOVED. NOTE 8 & 55 REVISED SKETCH D ADDED.

CHANGE ORDER 1831028 8-21-72

T.F.M.			10

FUSE BLOCK MTG HDWR, RES. MTG BRKT & LUGS CHANGED. NOTES & FIG. A REVISED, NOTE 56 & TABLE A ADDED.

CHANGE ORDER 1835354 11-22-77

J.R.			M1

4316-708	4316-705	4316-506	4316-507	4316-505	4317-007	4317-408	PART NO.	DESCRIPTION	NOTE	ITEM
20	20	24	24	24	16		2148-014	#6 (.157 X .300) SPRING WASHER		45
1	1	1	1	1	1	1	2151-107	#6 SPLIT LOCKWASHER		40
2	2	2	2	2	2	2	2458-167	11/64 X 7/16 X .064 FBR WASHER		
1	1	1	1	1	1	1	2141-061	#6 (.156 X .312 X .036) FW		
20	20	24	24	24	16		2187-038	6-32 X 1-1/4 FHTFMS		35
1	1	1	1	1	1	1	2251-224	6-32 X 2-1/4 PHMS		
						18	2187-033	6-32 X 1/2 TFMS		
		3	6				2456-126	, 8-2 GA		
5	5	3		6	4		2456-127	TERM LUG, 14-4 GA		30
1	1	1	1	1	1	1	2657-964	RES (TAPPED) 2500Ω, 10W		
1	1	1	1	1	1	1	2371-209	6-32 X 1" HEX SPACER		
					1		3172-101			25
1			1				3172-129			
1				1		1	3172-128			
	1	1	1				3172-116	DESIG CARD		
1	1						3636-111			20
		1	1	1			3637-102			
					1		3417-111			
						1	3637-109	BUS BAR		
5	5	6	6	6	4		2486-283	DESIG PIN, EYELET TYPE (VIOLET)		15
5	5	6	6	6	4		2486-203	ALM FUSE, 1/4 A		
1							4312-003	FUSE BLOCK & LAMP ASSY		10
	1				2		4312-606	ASSY, (4) 70 TYPE		
		3	6				2488-181	, 31-60A MTG		
5	5	3		6	4		2488-177	, 0-30A MTG		
						9	2488-403	FUSE BLOCK, (TWO 70 TYPE FUSES		5
1	1	1	1	1	1		3533-134			
						1	3531-120	PANEL		1

TABLE A
INPUT LUG KITS

RATING	PART NO.
14-4 AWG	4835-523
8-2 AWG	4835-524
2-1/0 AWG	4835-525
4-3/0 AWG	4835-526
1/0-350 MCM	4835-527

11

FIVE 0-30 AMP, TWO 70 TYPE FUSES & ASSOC ALM LAMP
FIVE 0-30 AMP & FOUR 70 TYPE FUSES
THREE 0-30 & THREE 31-60 AMP FUSES
SIX 31-60 AMP FUSES
SIX 0-30 AMP FUSES
FOUR 0-30 AMP & EIGHT 70 TYPE FUSES
EIGHTEEN 70 TYPE FUSES
DESCRIPTION
REFERENCE INFORMATION
DWG NO
19" FUSE PANEL AND MOUNTINGS FOR

(FORMERLY J-603-36)

STOCKLIST & ASSEMBLY
DISTRIBUTION FUSE PANEL
(MOLDED FUSE BLOCKS)
0-60 AMPERE
(24V, 48V, 130V PLANTS)
(19" RR MTG)

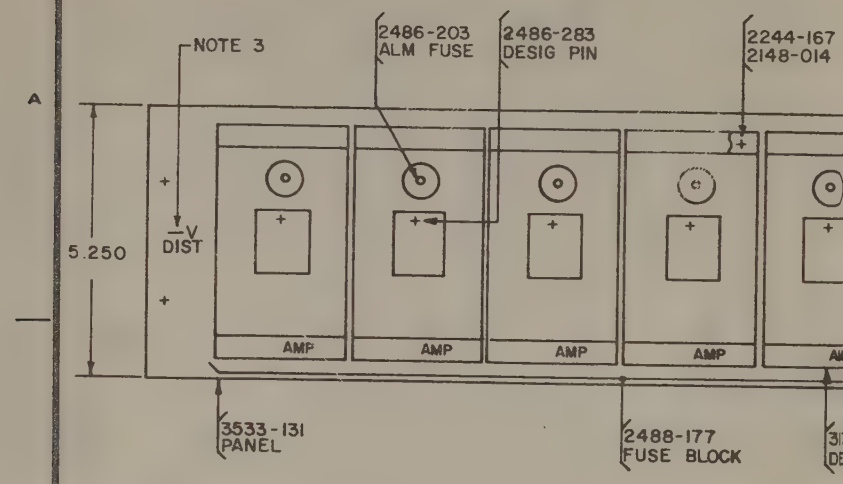
LORAIN PRODUCTS CORPORATION
LORAIN, OHIO
LORAIN PRODUCTS (CANADA) LTD., ST THOMAS, ONTARIO

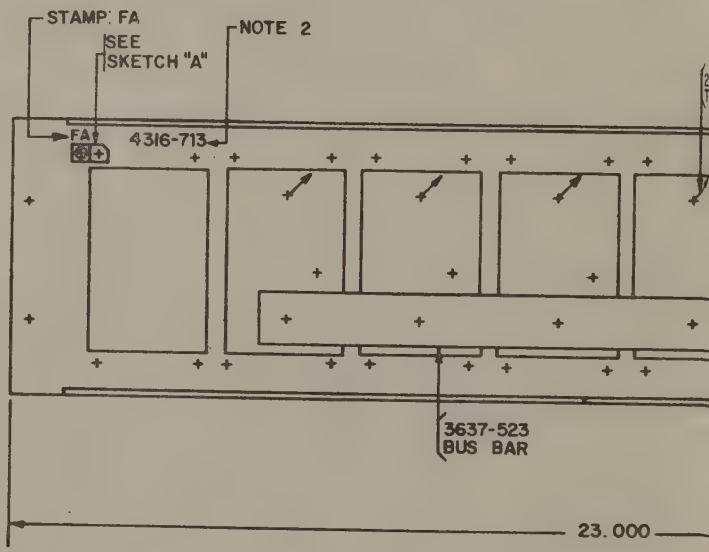
DWG SIZE D

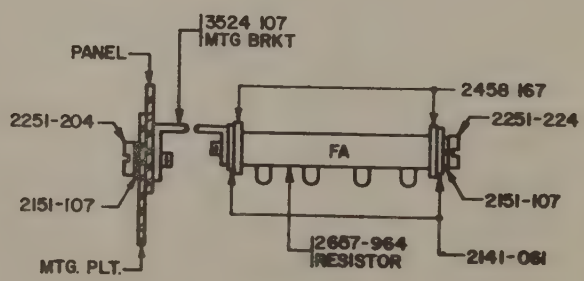
DRAWN BY	RS	DATE 5-31-62
CHECKED BY		DATE
APPROVED BY		DATE
RATING	STANDARD	

4317-408
4317-007
4316-708
4316-705
4316-507
4316-506
4316-505

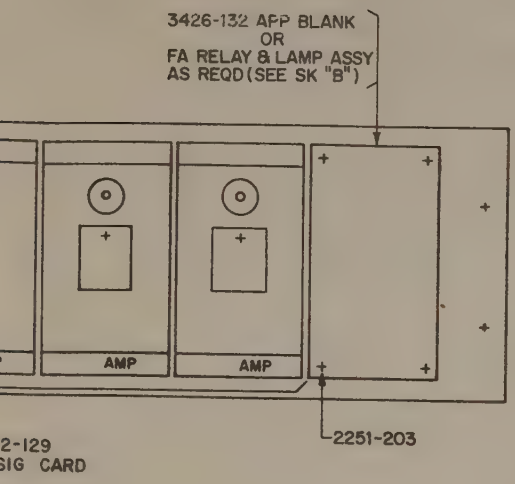
PRINTED IN U.S.A.

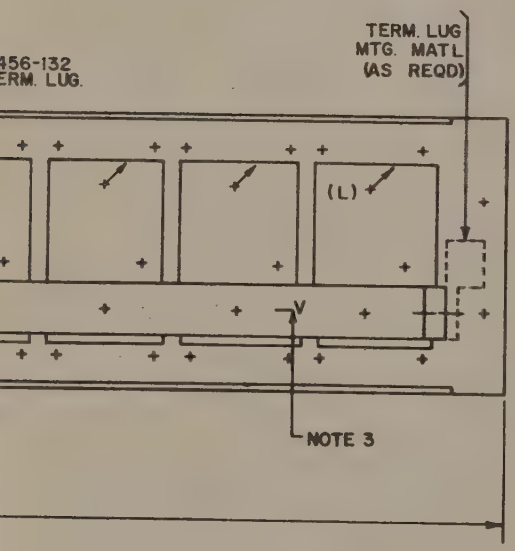






SKETCH "A"
METHOD OF MOUNTING
FA RESISTOR





SHOP	INST.	MANUFACTURING NOTES
X		1. ALL STAMPING TO BE 0.156 CHARACTERS.
X		2. STAMP PANEL ASSY. NO. IN APPROX. POSITION INDICATED.
X		3. STAMP 24V, 48V, OR 130V IN ACCORDANCE WITH JOB INFORMATION.

ENGINEERING NOTES

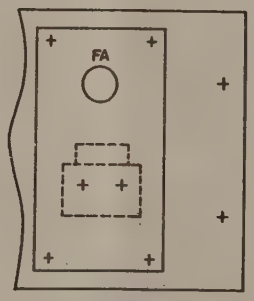
51. ALARM FUSES (2486-203) ARE FURNISHED FOR CARTRIDGE TYPE MOUNTING ONLY. DISTRIBUTION FUSES (CARTRIDGE AND 70 TYPE WITH ASSOCIATED DESIGNATION PINS) ARE NOT FURNISHED AND SHALL BE ORDERED AS REQUIRED.

52. SPECIFY OPERATING VOLTAGE AS REQUIRED.

53. WHEN 0-30A AND/OR 31-60A FUSE PANELS ARE TO BE INTER-CONNECTED, ORDER (1) 3476-102 LINK AND (2) 2148-247, (2) 2285-571, AND (2) 2276-406, (2) 2142-031 1/4-20 MTG. MATL..

REVISIONS

LTR NO.	CHGD BY CHG SLIP NO.	DATE	DESCRIPTION
1			NEW



SKETCH "B"
TYPICAL FUSE ALARM
RELAY & LAMP ASSY

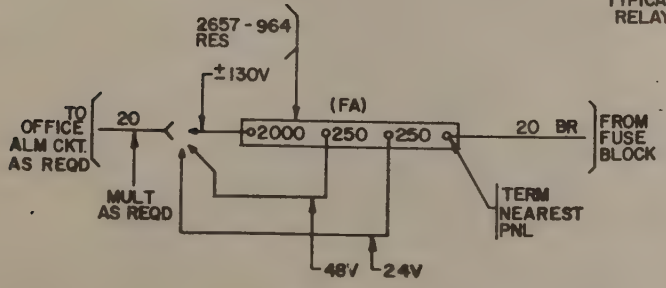


FIG. A
FUSE ALARM RESISTOR
(ONE PER FUSE PANEL)

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCE ON
FRACTIONS ± 1/32 DECIMALS ± 0.031 ANGLES ± 1.5°

SIZE C

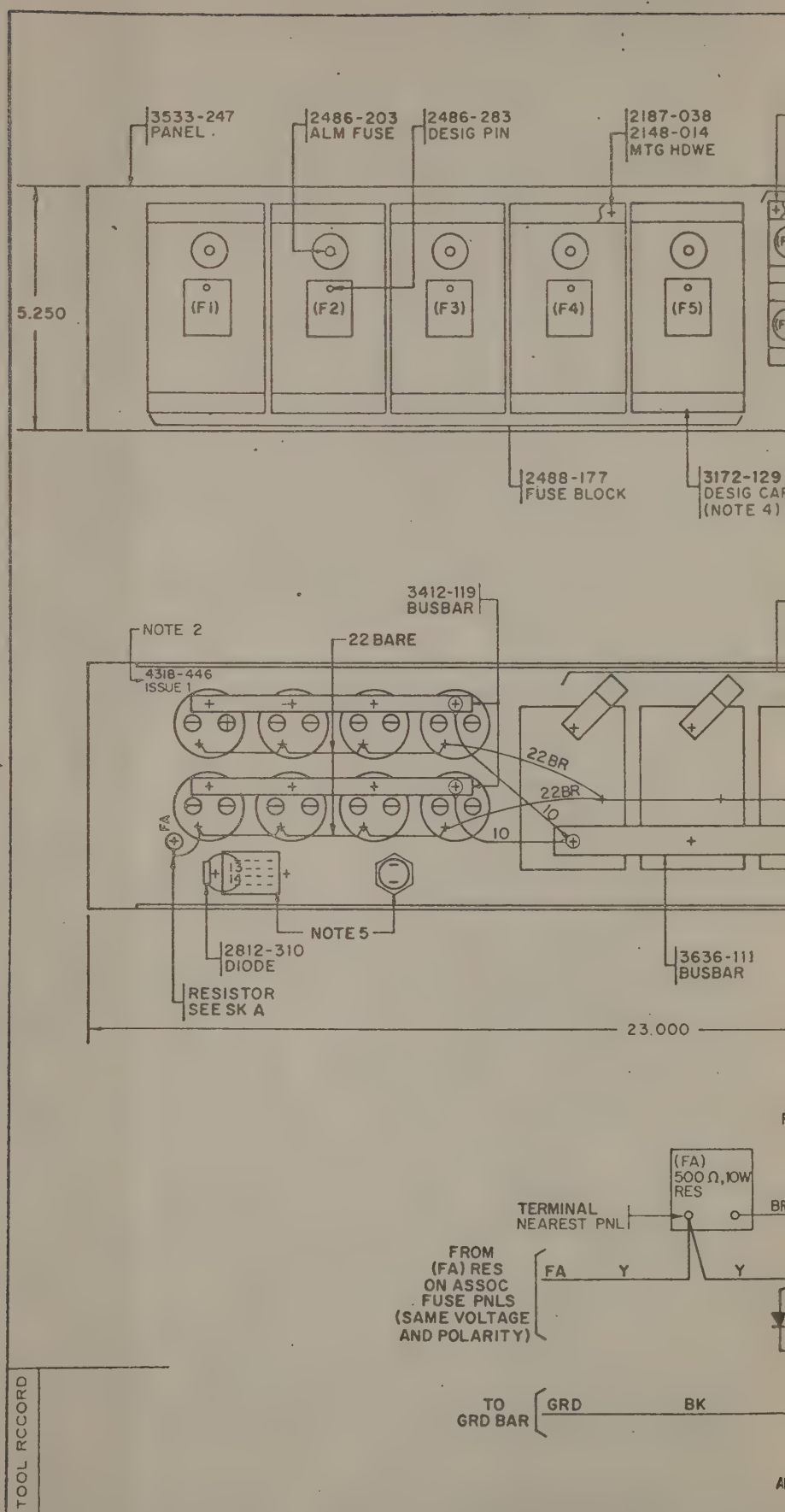
ASSEMBLY
DISTRIBUTION FUSE PANEL
E/W (7) 0-30A FUSE BLOCKS AND
(23" R.R. MTG.)
WITH (1) POSITION AVAILABLE FOR
FA RELAY & LAMP ASSY

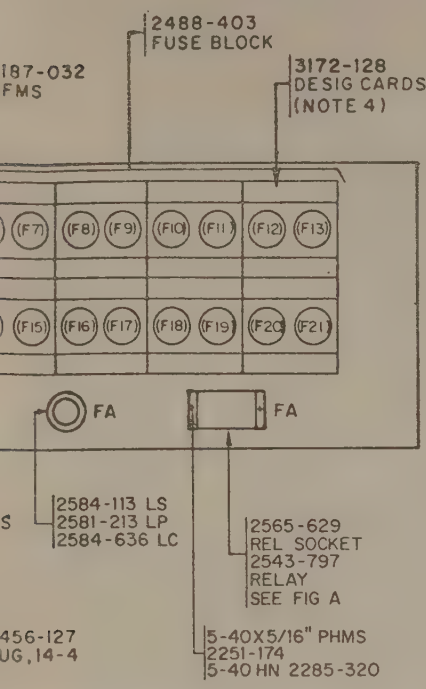
MATERIAL:

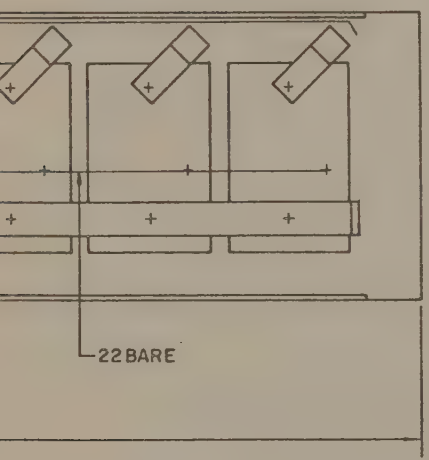
FINISH:

LORAIN Products Corporation
LORAIN, OHIO
LORAIN PRODUCTS (CANADA) LTD. ST. THOMAS, ONTARIO

DWN. BY T.F.M	DATE	SCALE	DO NOT SCALE
CK. BY W.E.S.	DATE 5-10-74	4316-713	
CK. BY	DATE		
APP. BY	DATE 5-14-74	SHEET 1 OF 1	


3533-247
PANEL
2486-203
ALM FUSE
2486-283
DESIG PIN
2187-038
2148-014
MTG HDWE
5.250
(F1)
(F2)
(F3)
(F4)
(F5)
2488-177
FUSE BLOCK
3172-129
DESIG CAR
(NOTE 4)
3412-119
BUSBAR
NOTE 2
22 BARE
4318-446
ISSUE 1
22BR
22BR
10
10
FA
NOTE 5
2812-310
DIODE
RESISTOR
SEE SK A
3636-111
BUSBAR
23.000
(FA)
500 Ω, 10W
RES
TERMINAL
NEAREST PNL
FROM
(FA) RES
ON ASSOC
FUSE PNLS
(SAME VOLTAGE
AND POLARITY)
FA
Y
Y
TO
GRD BAR
GRD
BK
TOOL RCCORD





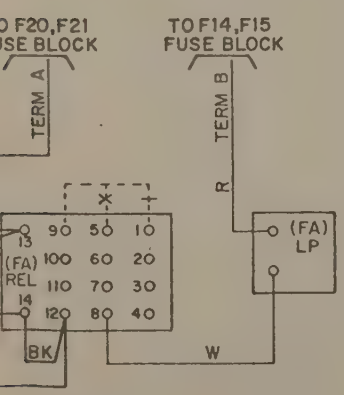


FIG A
ARM RELAY AND LAMP
WIRING

SHOP	INST	MANUFACTURING NOTES
X		1. ALL STAMPING TO BE 3/16" BLACK CHARACTERS UNLESS OTHERWISE SPECIFIED.
X		2. STAMP PANEL ASSEMBLY AND ISSUE NUMBER IN APPROXIMATE POSITION INDICATED.
X	X	3. DESIGNATIONS SHOWN ( ) ARE FOR REFERENCE ONLY.
X	X	4. SEE ASSOC. WIRING DIAGRAMS FOR FUSE ASSIGNMENTS AND INSERT DESIGNATION CARDS ACCORDINGLY. SPECIAL DESIGNATION CARDS TO BE PROVIDED PER JOB REQUIREMENTS.
X		5. WIRE ALARM RELAY AND LAMP PER FIG A. ALARM WIRING TO BE 22GA.

ENGINEERING NOTES

51. ALARM FUSES (2486-203) ARE FURNISHED WITH CARTRIDGE TYPE BLOCKS ONLY. DISTRIBUTION FUSES (CARTRIDGE AND 70 TYPE WITH ASSOCIATED DESIGNATION PINS) ARE NOT FURNISHED. PROVIDE FUSES PER TABLE A AS REQUIRED.

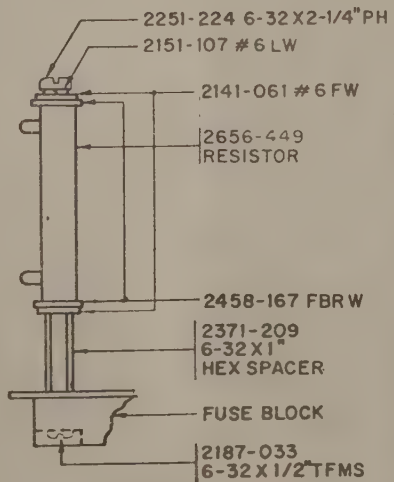
52. ORDER 3476-102 BUSBAR LINK AND ASSOCIATED 1/4-20 MOUNTING MATERIAL WHEN CONNECTION TO OTHER FUSE PANEL IS REQUIRED.

REVISIONS

REV NO	CHG SLIP NO / CHGD BY	DATE	DESCRIPTION
1	NEW	MAY 28 1980	

TABLE A

NON CARTRIDGE FUSES		70 TYPE ALARM FUSES		DESIGNATION PINS
AMP	L.P.C. PART NO.	AMP	L.P.C. PART NO.	L.P.C. PART NO.
3	2483-503	1/4	2486-202 (70F)	2486-282 (VIOLET)
6	2483-505	1/2	2486-205 (70G)	2486-284 (RED)
10	2483-507	3/4	2486-206 (70H)	2486-286 (BROWN)
15	2483-509	1-1/3	2486-208 (70A)	2486-289 (WHITE)
20	2483-511	2	2486-212 (70B)	2486-292 (ORANGE)
25	2483-513	3	2486-215 (70C)	2486-294 (BLUE)
30	2483-515	5	2486-217 (70D)	2486-297 (GREEN)



SK A
FA
RESISTOR MTG

LORAIN PRODUCTS CORPORATION
LORAIN, OHIO
A subsidiary of Reliance Electric

ASSEMBLY
-48 VOLT FUSE PANEL
E/W ALARM RELAY & LAMP,
(5)0-30A & (16)0-5A
(5-1/4" X 23" MTG.)

MATERIAL:	E. GARTON	
	E. GARTON	2-12-80
		3-5-80
		3-5-80
	DO NOT SCALE DWG	
FINISH:	4318-446	
	SHEET 1 OF 1	

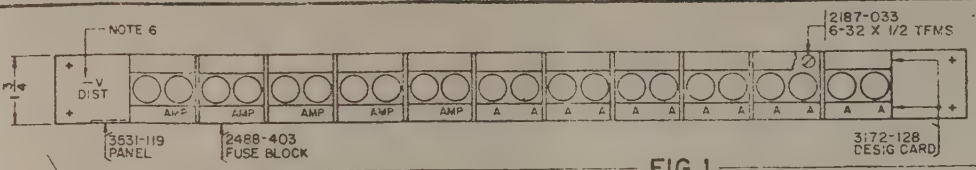
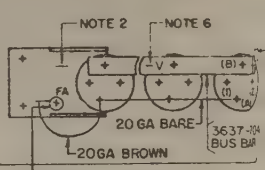
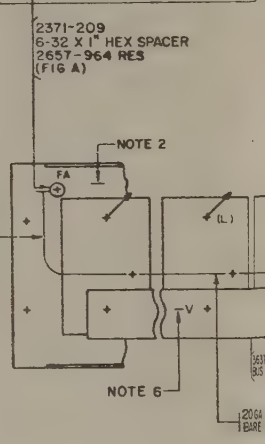


FIG 1
(4318-405)





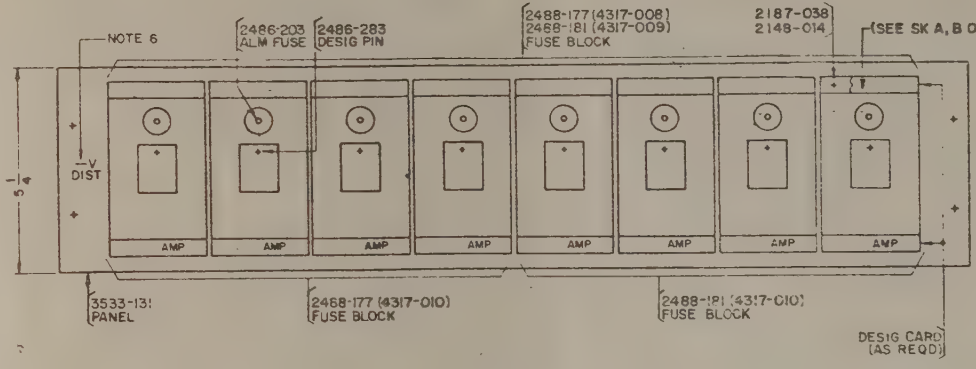
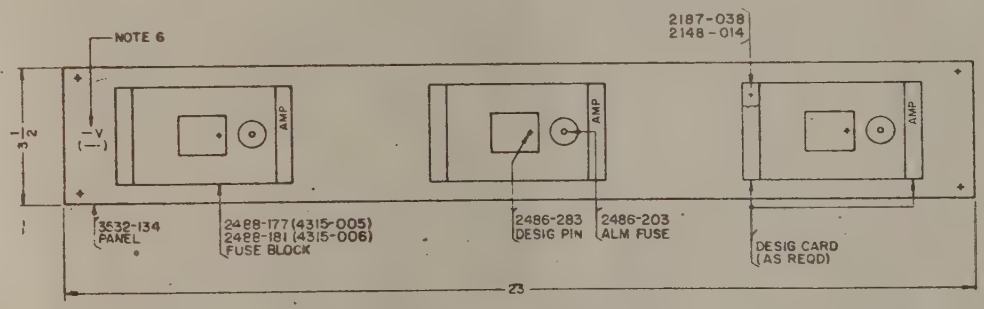


FIG 2
(4317-008, 4317-009, 4317-010)



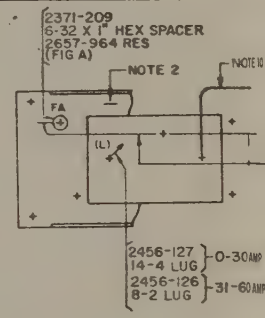
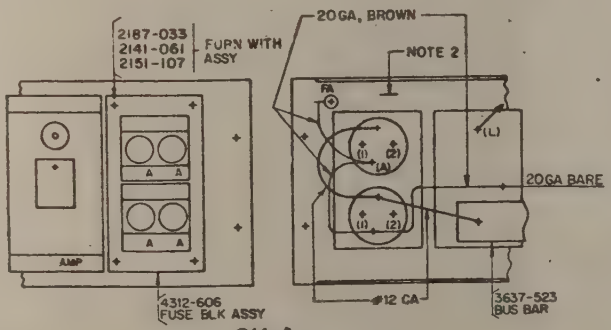
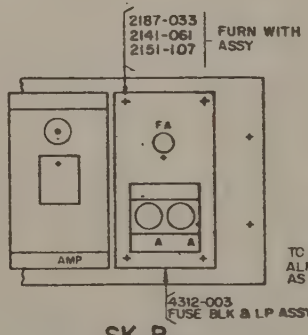


FIG 3
(4315-005 & 4315-006)



SK A
APPARATUS ARRANGEMENT - 4317-409
(OTHERWISE SAME AS FIG 2)



SK B
APPARATUS ARRANGEMENT - 4317-011
(OTHERWISE SAME AS FIG 2 & SK A)
(NOTE 5A)

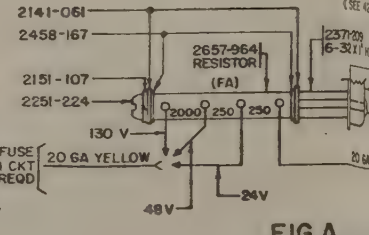
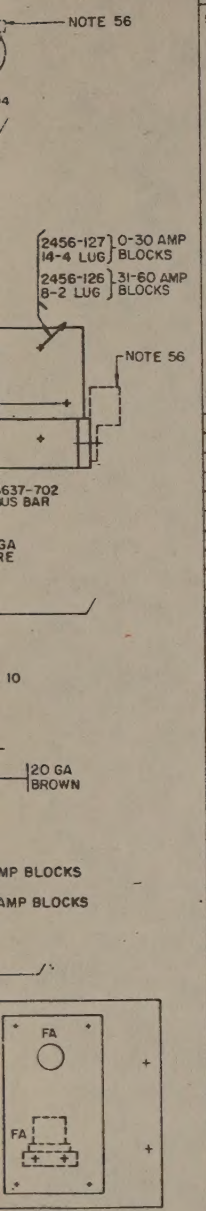


FIG A
FUSE ALARM RESISTOR MOUNTING & WIRING
(ONE PER FUSE PNL)
(NOTE 8)



ENGINEERING NOTES

51 ALM FUSES (2486-203-70K) ARE FURN. FOR CART TYPE MTGS ONLY. DIST FUSES (CART & 70 TYPE WITH ASSOC DESIG PINS) ARE NOT FURN & SHALL BE ORDERED AS REQUIRED.

70 TYPE ALM FUSES		DESIGNATION PINS	
AMPERE	L P C PART NO.	L P C PART NO.	
1/4	2486-202 (70F)	2486-282	(VIOLET)
1/2	2486-205 (70G)	2486-284	(RED)
3/4	2486-206 (70H)	2486-286	(BROWN)
1-1/3	2486-208 (70A)	2486-289	(WHITE)
2	2486-212 (70B)	2486-292	(ORANGE
3	2486-215 (70C)	2486-294	(BLUE)
5	2486-217 (70D)	2486-297	(GREEN)

52. SPECIFY OPERATING VOLTAGE AS REQUIRED.

53. WHEN 0-30A AND/OR 31-60A FUSE PANELS ARE TO BE INTER-CONNECTED, ORDER (1) 3476-102 LINK & (1) 2276-406, (2)2141-101, (1)2151-111 & (1) 2285-570 1/4-20 MTG MATL.

54 ASSY 4317-011 IS FOR SPECIAL APPLICATION & IS NOT FOR USE WITH STANDARD CODED PWR BDS. SPECIFY 24V OR 48V ALM LAMP AS REQ'D.

55 WHEN FUSE PNL IS TO BE MODIFIED FOR FUSE ALARM LAMP & RELAY ASSY SPECIFY VOLTAGE & POLARITY.

56. ORDER INPUT LUG KIT PER TABLE A AS REQD.

MANUFACTURING NOTES

SHOP	INST	
X		1. ☒ ITEMS NOT ASSEMBLED, SHIPPED LOOSE.
X		2 STAMP PNL ASSY. & ISSUE NUMBER IN APPROX POSITION INDICATED.
X		3. DIST FUSES ARE NOT PROVIDED & SHALL BE FURN PER JOB INFORMATION.
X		4. ALL STAMPING TO BE 3/16" CHARACTERS UNLESS OTHERWISE SPECIFIED.
X	X	5 ( ) DENOTES DESIGNATIONS SHOWN FOR REFERENCE ONLY.
X		6. STAMP 24V, 48V OR 130V & CHG OR DIST IN ACCORDANCE WITH JOB INFORMATION.
X		7. SEE DWG 0311-912 OR 913 FOR WRG. INFO.
X		8. FOR SPECIAL FUSE ALARM APPLICATIONS DISREGARD FIG A & FURN ALARM WIRING PER 0311-913 OR ASSOC JOB DWG.
		9. RESERVED.
X		10. USE 8 GA INTERCONNECTING CA FOR 4315-005 4 GA FOR 4315-006.

REDRAWN & REVISED 1140AS1, DESGR READ 4-70 TYPE FUSES. CHANGE ORDER 12497 3-23-65

DT | 10

ITEM 44 ADDED. CHANGE ORDER 16715 11-17-66

P.Y. | 11

1140AS & 1140AS1 - ITEM 18, QUAN OF 1 REMOVED & ITEM 19 ADDED. NOTE 8 REMOVED. CHANGE ORDER 16721 12-4-66

P.Y. | 12

NOTE 9 REMOVED. NOTE 55 REVISED. NOTE 8 & SK C ADDED. CHANGE ORDER 1831028 8-21-72

T.F.M. | 13

FUSE BLOCK MTG HDWR, RES. MTG BRKT & LUGS CHGD. FIG. A & NOTES REVISED. NOTE 56 & TABLE A ADDED. CHANGE ORDER 1835354 11-14-77

J.R. | 14

ITEM 31 & 32 QUANTITIES CORRECTED. MTG HDWE CORRECTED. CHANGE ORDER 1836587 5-17-78

15

4317-011	4317-009	4315-006	4317-010	4317-008	4315-005	4317-409	4318-405	PART NO.	DESCRIPTION	NOTE	ITEM
											45
28	32	12	32	32	12	28		2148-014	#6 (.157 X .300) SPRING WASHER		
1	1	1	1	1	1	1	1	2151-107	#6 SPLIT LOCKWASHER		
1	1	1	1	1	1	1	1	2141-061	#6 (.156 X .312 X .036) FW		40
2	2	2	2	2	2	2	2	2458-167	11/64 X 7/16 X .064 FBR WASH		
28	32	12	32	32	12	28		2187-038	6-32 X 1-1/4 FHTFMS		
1	1	1	1	1	1	1	1	2251-224	6-32 X 2-1/4 PHMS		
							22	2187-033	6-32 X 1/2 TFMS		35
	8	3	4					2456-126	[, 8-2 GA		
7			4	8	3	7		2456-127	LTERM LUG, 14-4 GA		
											30
1	1	1	1	1	1	1	1	2657-964	RES (TAPPED), 2500Ω, 10W		
1	1	1	1	1	1	1	1	2371-209	6-32 X 1" HEX SPACER		
											25
	1	1	1					3172-116	[	X	
1			1	1	1	1		3172-129	[	X	
1						1	1	3172-128	DESIGNATION CARD	X	
											20
1						1		3637-523	[		
	1		1	1				3637-702	[		
							1	3637-704	BUS BAR		
											15
7	8	3	8	8	3	7		2486-283	DESIG PIN, EYELET TYPE (VIOLET)		
7	8	3	8	8	3	7		2486-203	ALM FUSE, 1/4 AMP		
1								4312-003	FUSE BLOCK & LAMP ASSY		
						1		4312-606	FUSE BLOCK ASSY, (4) 70 TYPE		10
	8	3	4					2488-181	[, 31-60 A		
7			4	8	3	7		2488-177	[, 0-30 A		
							11	2488-403	FUSE BLOCK, (2) 70 TYPE		
											5
		1			1			3532-134	[		
1	1		1	1		1		3533-131	[		
							1	3531-119	PANEL		1

SEVEN 0-30 AMP FUSES, TWO 70 TYPE FUSES & ASSOC ALM LAMP (4317-011)	EIGHT 31-60 AMP FUSES (4317-009)	THREE 31-60 AMP FUSES (4315-006)	FOUR 0-30 AMP FUSES & FOUR 31-60 AMP FUSES (4317-010)	EIGHT 0-30 AMP FUSES (4317-008)	THREE 0-30 AMP FUSES (4315-005)	SEVEN 0-30 AMP FUSES & FOUR 70 TYPE FUSES (4317-409)	TWENTY-TWO 70 TYPE FUSES (4318-405)	DESCRIPTION
								DWG NO.

23" FUSE PANEL AND MOUNTINGS FOR

REFERENCE INFORMATION

(FORMERLY J-603-37)

STOCKLIST & ASSEMBLY
DISTRIBUTION FUSE PANEL
(MOLDED FUSE BLOCKS)
0-60 AMPERE
(24V, 48V, 130V PLANTS)
(23" RR MTG)

LORAIN PRODUCTS CORPORATION
LORAIN, OHIO
LORAIN PRODUCTS (CANADA) LTD., ST THOMAS, ONTARIO

SIZE D

DRAWN BY SJS DATE 6-13-62
CHECKED BY DATE
APPROVED BY DATE

RATING STANDARD 15

4318-405
4317-409
4317-011
4317-010
4317-009
4317-008
4315-006
4315-005

PRINTED IN U.S.A.

TABLE A
INPUT LUG KITS

RATING	PART NO.
14-4 AWG	4835-523
8-2 AWG	4835-524
2-1/0 AWG	4835-525
4-3/0 AWG	4835-526
1/0-350 MCM	4835-527